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CONTENTS AND DIGEST

Industrial Medicine and Surgery: The New Specialty. Harry E. Mock, M.D., Chicago.....1

Training needed by the industrial company physician or surgeon. The work of the medical staff: preventive surgery. Preventive medicine.

Medical Supervision of Factory Employees: Result of Five Years' Experience. W. Irving Clark, Jr., M.D., Worcester, Mass.....5

Functions of the factory physician. Physical examinations. Rejections. Defects that do not bar from employment. Handling of accidents. Treatment of sickness. Health publicity.

The Prevention of Chronic Middle Ear Suppuration. George W. Mackenzie, M.D., Philadelphia.....8

Essentials of the prevention of middle ear disease. A knowledge of the etiology, pathology and diagnosis. When a case can be classed as chronic. Obstructions to pus discharge; how they occur, and cause chronicity. Mastoid operation, its effects and when indicated. Other factors: tuberculosis, syphilis, diabetes, general lack of vitality, susceptibility to a particular organism, etc.

Nonoperative Treatment of Otitis Media. Norval H. Pierce, M.D., Chicago..11

Patience required in the nonoperative treatment of the disease. Importance of its location and the character of the pathologic process. Details of treatment.

The End-Results of Treatment of Chronic Suppurative Otitis Media. John F. Barnhill, M.D., Indianapolis 13

Nonoperative and operative cases. Conditions on which the end-results depend, and their nature.

Papers of Drs. Mackenzie, Pierce and Barnhill discussed by Drs. Emerson, Dixon, Welty, Jones, Holinger, Prince, Tydings, Harris, Tomlin, Robertson, Hawley, Mackenzie, Pierce and Barnhill.

Wounds in War and Methods of Treatment. A. U. Desjardins, M.D., Waterville, Maine.....18

Conditions under which wounds were received in the early months of the present European war, and later. Difficulties of giving early proper care. Nature of wounds caused by different projectiles. Complicating factors. Gas infection. Methods of treatment. Use of antiseptics. No one method universally applicable. The greatest lesson to be learned from the surgery of this war.

The Production of an Antipoliomyelitic Serum. John W. Nuzum, M.D., Chicago.....24

Immunization of animals. Virulence of the micro-organism of poliomyelitis. Animal protective experiments. Protective experiments in monkeys.

General Health Conditions in Belgium After Two Years of Relief Work by the Commission for Relief in Belgium. William Palmer Lucas, M.D., San Francisco.....27

Economic and social classes concerned. Tuberculosis situation. General health conditions in the adult population. Diminution in maternal nursing. Diminution in birth rate. Health of infants and children. Institutional feeding of children.

(Continued on next page)

ENTERED AS SECOND-CLASS MATTER, JUNE 25, 1885, AT THE POSTOFFICE AT CHICAGO, ILLINOIS, UNDER ACT OF MARCH 3, 1879.
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SAUNDERS, *Publishers*

See Page 3

CONTENTS AND DIGEST—Concluded

Aural Typhoid Carriers: A Report of Two Cases. A. B. Bennett, M.D., Washington, D. C. 33

THERAPEUTICS

Disturbances of the Kidneys (Continued) 33

NEW AND NONOFFICIAL REMEDIES

Description of Articles Accepted by the Council on Pharmacy and Chemistry 35

Formin—Veronal.

EDITORIALS

A Study of Crossed Tolerance for Drugs 36

Existence of cross tolerance, which involves only those structures on which the drugs exert effects mutually alike.

Cold Air and Pneumonia in Childhood 36

Inconclusiveness of data on the effects of outdoor treatment.

Deaths of Physicians in 1916 37

Annual review of mortality.

The Refinement and Concentration of Diphtheria Antitoxic Serums 38

An advance exemplifying the best spirit of scientific endeavor.

CURRENT COMMENT

Tumor Chemistry 39

High content of diamino acids in malignant tumor tissue.

Is Pellagra Transmissible? 39

Negative experimental evidence.

The Effect of Chronic Lead Poisoning in the Germ Cells of the Male 40

Qualitative changes in the germ plasm.

The Search for the Ideal Antiseptic 40

Effect of various agents on bacteria and tissue cells.

MEDICAL NEWS

Arkansas: Personal — Hospital Activities 41

California: Personal — Supreme Court to Decide — Lectures at Stanford Medical School 41

Connecticut: Smallpox — State Health Association Organized — Personal 41

District of Columbia: Medical Society Elects Officers — Medical Committee for Inauguration Day — Novel Suit for Damages 41

Georgia: New Medical Societies Organized — New Officers 41

Illinois: Paris Protects Against Smallpox — Sanitary Survey of Quincy — Vote on Sanatorium Declared Illegal — Personal—Health News — Vaccination Ruling Upheld — Contagious Disease Hospital — Venereal Disease Prevention. Chicago: Hospital to Be Reopened — Sister Mary Raphael Dies — Personal — Defective Children 42

Kentucky: Trachoma — Louisville Physicians Elect Officers — Health Officers' School — Personal — Decision on Pollution of Streams 42

Louisiana: New Armory Opened — New Officers — Personal — Adopts Higher Requirement — Ragweed and Hay-Fever 43

Maryland: Books Left to College — Personal — Free Water for Hospitals 43

Massachusetts: Osteopaths' Offer Declined — Harvard Medical Lectures — Personal 43

Minnesota: Hospital News—Sanatorium Notes — The Study of Health Problems — Personal 43

Montana: Personal — New Hospitals — New Officers 43

New Mexico: Sanatoriums Consolidated — New Officers 43

New York: Personal. New York City: Birth Control Rejected—Fined for Selling Impure Drugs — Harvey Society Lecture — Increase in Street Accidents in 1916 43

North Carolina: District Society Meeting — High Birth Rate — Personal 44

Ohio: Personal — Chiropractor Prosecuted — Sue for Licenses — Academy Election — Illegal Practitioner Arrested—Divine Healer Arrested. Cincinnati: Personal 44

Pennsylvania: Endowment Raised — Gift of Portrait — Personal — Nurses May Give Anesthetics — Examination of Schoolchildren Approved — Contagious Diseases 44

Utah 44

Vermont 45

Washington 45

Canada 45

General 45

Foreign 46

London Letter 46

Paris Letter 47

MARRIAGES 48

DEATHS 49

PROPAGANDA FOR REFORM 50

The J. B. L. Cascade Treatment.

CORRESPONDENCE 53

Lister on the Use of Animals in Research.
Toxicity of Salvarsan.

QUERIES AND MINOR NOTES 54

Lead Poisoning from Q-Ban Hair Color Restorer.
Treatment of Arthritis Deformans.
Intravenous Injection of Quinin.
The National Board of Examiners; Reciprocity.
Literature on Infantile Paralysis.
Weil-Felix Diagnostic Reaction in Typhus.
Purpura Hemorrhagica.
Nine Useful Drugs.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations — New Mexico July Report — Pennsylvania July Report 55

Hawaii September Report — Massachusetts September Report — Wisconsin Reciprocity Report 56

BOOK NOTICES 56

SOCIAL MEDICINE, MEDICAL ECONOMICS AND MISCELLANY

Treponema Pallidum and Spirochaeta Pallida—Charles Wardell Stiles, M.D., Washington, D. C. 57

Practical and State Medicine 59

MEDICOLEGAL

There Must Be Some Imprisonment for Illegal Practice; As to Residence — Sufficiency of Complaint and Validity of Provisions of Medical Practice Act — Requisites to Making Married Woman Liable for Medical Services for Son 60

SOCIETY PROCEEDINGS 60

American Social Hygiene Association, Central States Division.

CURRENT MEDICAL LITERATURE

American Medical Journals

Acidosis in Acute and Chronic Disease—Action of Female Remedies on Excised Intestine — Origin and Conduction of Cardiac Impulse—Metabolism Study of Goiter — Changes in Form of Ventricular Complex 64

Artificial Respiration and Low Blood Pressure Splenectomy for Pernicious Anemia — Foreign Body in Tumor of Anterior Abdominal Wall — Operation for Retrodisplacements of Uterus 65

Antigenic Properties of Beta-Nucleoproteins — Action of Sodium Citrate; Its Decomposition in Body — Kafirin, Alcohol Soluble Protein from Kafir, Andropogon Sorghum—Proteins from Jack Bean—Proteins of Peanut, Arachis Hypogea—Chinese Preserved Eggs; Pidan—Dietary Deficiencies of Maize Kernel — Relation Between Water and Glucose of Blood — Calcium in Normal Men 66

Calcium and Magnesium Content of Normal Urine — Urea Excretion — Pancreatic Diabetes — Effect of Sodium Carbonate in Diabetes — Value of Temporary Cholecystostomy in Gastric Surgery — Actinomycosis — Subcutaneous Administration of Fresh Human Blood 67

Development of Neuritis in Animals — Study of Kidney Functional Tests — Bichlorid of Mercury Poisoning 68

Foreign Medical Journals

The Pulse and Blood Pressure Under Trauma —Bacillary Glandular Affections and Inherited Syphilis — General Medicine and Otorhinolaryngology — Address at the Arrival of Repatriated Medical Prisoners of War — Examination of the Abdomen and Tongue in Typhoid Group — Suspension in Treatment of Fractures — Extraperitoneal Wounds of the Colons 69

Cure of Alimentary Urticaria — Orthopedic Devices — Myelitis Under Salvarsan — Diabetes and the War 70

Bridging Gaps in Nerve — Epidemic of Dengue in Argentina—Diagnosis of Duodenal Ulcer —Cystic Kidney 71

Weil's Disease — Treatment of Hemangioma—Five-Day Fever — Biology of Body Louse—Hemolysis by Radium—Treatment of Bacilli Carriers — Systematic Study of the Blood Picture in Pulmonary Tuberculosis 72

Accumulation of Medicinal Agent in Tuberculous Tissue — Connection Between Trauma and Tuberculosis — Alimentary Dropsy — Bilateral Mammary Tuberculosis — Catheterization of the Ureters — Experimental Arthritis and Pathogeny of Arthritis in Rheumatic Fever — Spastic Spinal Paralysis of Alimentary Origin 73

Treatment of Gonorrhea in Males — The Hand Sign in Syphilis — Biologic Diagnosis of Pregnancy — Occlusion of the Urethra in Treatment of Gonorrhea — Treatment of Exstrophy of the Bladder 74

BOOKS RECEIVED—TONICS AND SEDATIVES ..... Adv. Page 20

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INDUSTRIAL MEDICINE AND SURGERY: THE NEW SPECIALTY*

HARRY E. MOCK, M.D.
CHICAGO

Preventive medicine and preventive surgery within the last five years have become a very active factor in the industrial life of our country. Our modern industrial concerns have employed experts to study their expensive, complicated machines, in order to preserve their mechanism and obtain their maximum of efficiency. The human machine alone was neglected.

Gradually, due to both external and internal causes, a new, humanizing influence pervaded a few of these industries, and they began to consider the welfare or betterment of the employees from various angles. It was soon apparent that this movement reacted to the welfare of the employers. The realization of this mutual benefit to employee and employer marked the birth of an entirely new economic point of view, which is rapidly extending to every branch of our American industrial life.

The conservation of life by the prevention of disease and accidents among employees, the basic principle underlying all forms of industrial medicine, is the greatest influence for socialization in our country at present. And to the company surgeon of today and of the future is given the opportunity of extending medical science into this vast, unlimited field of endeavor. In the past, and in many industries at the present time, the care of those meeting with accidents has been the chief duty of the company surgeon, with very little attention paid to the protection, the health and the working ability of the individual employee. Likewise, concerns having company surgeons often fail to realize the great economic advantage at their disposal for increasing efficiency by utilizing the expert knowledge of their physicians along these lines.

Due to this ignorance on the part of so many industries and the lack of vision and enthusiasm on the part of many company surgeons, this field of medicine has been considered very narrow, and the physicians engaged therein have been insufficiently paid, resulting in a restricted growth, and have been viewed with more or less contempt by the majority of the profession. But when a company surgeon realizes that for greater efficiency an employer has the right to demand a healthful, physically and mentally normal working force; and that the employee would be, and is, justified in demanding a healthful, sanitary working place, uncontaminated by diseased fellow employees; and that business principles, as well as a spirit of humanitarianism, demands all his powers for the conservation of the life and limb of the employee; and when he attains the vision of all that this means, and brings to his work an undying enthusiasm and a knowledge sufficient to master every detail, then he becomes of unlimited value to the concern for which he works, and is remunerated accordingly. And, most gratifying to him personally, he is recognized as an equal by his fellow physicians and as an advanced student in the science of medicine.

It is apparent that the company surgeon of the future must be a very broadly trained physician. Some of the largest industries can afford to have several doctors on their staff and thus can divide the medical work into its various specialties; but even here the chief of staff must be trained thoroughly in all branches of this work. In the smaller corporations, however, the company surgeon must be a surgeon, an internist, a diagnostician, a sanitation expert and an all-round medical utility man. As he follows the growing ramifications of his work and realizes its influence on the individual employee, its influence on the industrial concern and finally its influence on the community and society in general, and sees the state being forced to assume the responsibilities that his work is making so apparent, then the company surgeon gradually awakens to the fact that he has become a sociologist as well as a physician. Armed with this broader point of view, he becomes not only a doctor for the ills of the individual, but a physician to the ills of society.

Industrial medicine and surgery is rendering a wonderful service to the great mass of workers, but it is also rendering a greater service to those physicians engaged in the work. It is molding them into specialists in the great medicosociological problems which are confronting this country more and more.

The size of the medical staff, the size and location of the doctor's office or company hospital, and the amount of work necessary to conduct a comprehensive plan of medical and surgical supervision of the health of employees must depend chiefly on the size, number of employees and the type of work of each industry. These are details which each company surgeon must work out, and which will certainly be changed with the growth of his work.

The industry with which the writer is connected has gradually extended its medical staff and equipment from a four-room office with one doctor and two nurses in 1909, to an eighteen-room office with seven doctors, twelve nurses and two dentists in 1916. The doctors spend three and one-half hours per day at this work, so rotating that there is always some one in

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

* This article and the one by Dr. Clark which follows are parts of a symposium on Industrial Medicine. The remaining articles by Drs. Lemon and Smith and the discussion will appear in THE JOURNAL, January 13.

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charge of the company office. While many of our best company surgeons devote all of their time to the industries employing them, yet, as a rule, the various corporations will find that they can secure better-trained and broader physicians if they require them to give only a part of their time to this work. The situation is quite analogous to that found in our leading medical schools. The heads of departments and those associated with them give a portion of each day to teaching and clinical work; the rest of their time is given to private practice, study and investigation. Because of their clinical experience and the broadening influence of their private and public work, these men become the leaders and scholars in our profession and their influence in the community at large is much greater than it would be if they devoted their entire time, on a salary, to teaching in a medical school. Thus with a company surgeon, the greater name and prestige he can build up for himself in his community, the greater his value to the industry with which he is connected and the greater his influence over the employees and their confidence in him.

THE WORK OF THE MEDICAL STAFF: PREVENTIVE SURGERY

Those engaged in emergency accident work for any industry are naturally trained, by the very nature of the work, to view every case from the economic standpoint of both the employee and employer. An accident occurs, and at once we plan the subsequent handling of the case with these four fundamental principles in mind: (1) how to prevent a recurrence of the accident; (2) how to aid recovery the quickest; (3) how to prevent permanent disability, and (4) how to avoid a fatal termination of the case.

The welfare of the patient, the protection of the other employees, and the interests of the employer all demand the careful consideration of these principles.

The evolving of the simplest and yet most adequate methods of enforcing these four principles is the foundation of preventive surgery. And just as prevention of disease will eliminate some surgery, so the prevention of accidents will eliminate vastly more, and the best surgeon of the future, whether engaged in industrial work or otherwise, will be the surgeon who is very conservative in operating, but very radical in the prevention of all causes that make surgery necessary.

The safety engineers with their safety appliances and the educational propaganda of all safety first movements have been instrumental in preventing a great many accidents, especially from machinery. But the alert emergency surgeon, by carefully analyzing the cause of every injury that comes to him for treatment, and then by cooperating with the safety engineer, making certain that that cause has been removed, becomes one of the greatest factors in all accident prevention. Very often the cause for the accident lies within the employee himself, in his physical or mental condition at the time it occurred. It is therefore the paramount duty of the surgeon to carefully analyze the condition of that employee in his search for the cause. This analysis must include a thorough physical examination and mental tests, and an examination of both the working and home conditions of that employee. This last duty can be performed by a competent trained nurse, who is the greatest adjunct to the company surgeon in all his work. The removal of the cause, whatever it may be, or wherever found, in every case of accidental injury that comes before him, is the duty of the preventive surgeon, and is the most logical and most economic form of service that he can render to the employee or employer. And the time is not far distant when municipalities, the state, and the federal governments will awaken to the great waste of life and limb, the result of accidents, not only in industries, but in the homes, in the streets and in every branch of our daily walks of life. And we as surgeons will be required to do our share in analyzing every case of injury brought to the office or the hospital and report the same to the proper authorities, so that the cause for that accident can be removed, just as we are now compelled to report on contagious diseases. And we as surgeons will look backward with saddened hearts on these dark ages when our sole service to society was merely the repair of the frightful injury to the individual, or simply pronouncing him dead, without a single thought given to preventing some other unfortunate from suffering a similar accident.

The immediate care (and by immediate I mean within a very few minutes) of every one injured, no matter how slightly, is another most important duty of preventive surgery. The first aid movement, which is sweeping the country under the leadership of Dr. Joseph Bloodgood, is one of the best signs that the surgeons are alive to prevention. But every first aid man or woman must be taught that he is only for first aid, and every first aid kit must contain supplies only for first aid. There should be a bottle of tincture of iodin (5 per cent. is sufficient) and a bottle of applicators; a bunch of sterile dressings put up singly in envelopes or paper; a few large pads, sterilized, and to be used in case of hemorrhage or large wounds; bandages and a constrictor. The constrictor I advocate is a stout muslin bandage rather than a rubber tourniquet, as it is safer in the hands of a layman. You may add to this a bottle of aromatic spirits of ammonia with directions as to its use, but no other medicines are indicated. The industries must be taught that the safest and cheapest first aid for them to employ is a doctor in a company office located at the plant, where he can render immediate surgical care to every one injured, and at the same time can supervise the health of the employees. In the outlying portions of a large plant or in the dangerous departments the employees may injure themselves in such a way that first aid is necessary until they can reach the doctor's office. In such departments in one industry I have placed first aid supplies orderly arranged in substantial looking boxes. But on these boxes, at the head of the directions for the use of the supplies, I have this warning:

READ CAREFULLY

This is a FIRST AID OUTFIT ONLY. It is not to be used for subsequent dressings. The purpose of the *First Aid Man* is not to replace the *Doctor.*

Send every injured employee to the Doctor's office AT ONCE NO MATTER HOW SLIGHT THE INJURY. Use these supplies for temporary dressings until the proper medical care can be obtained.

Two years ago I obtained statistics from a number of industries and accident insurance companies and found that it was the minor accidents, such as scratches, pin pricks, nail wounds, splinters and small cuts that caused the largest amount of disability, and this disability was usually due to infection. Infection in major injuries was comparatively rare. These facts are due to the difficulty of preventing these minor accidents, and because an employee as a rule does not seek

medical aid for a slight scratch or cut until it becomes infected, whereas a serious injury forces him under the care of a surgeon at once. To combat these minor accidents we have resorted to an educational propaganda against them, the removal of every possible cause for them, and the management insists and enforces the rule that every injured employee must report to the doctor at once, no matter how slight the injury. But the best preventive surgery measure thus far adopted is the immediate use of tincture of iodin on all wounds that break the skin. Every department is supplied with from one to ten bottles of tincture of iodin and applicators (cotton rolled on the end of a toothpick) held in containers made as attractive as possible and placed in conspicuous places. Directions on the box tells the employee to paint every pinprick, scratch, cut, puncture wound, etc., with the iodin at once and then he must report to the doctor's office at once. The use of the iodin alone is not sufficient. Reporting to the doctor at once is not sufficient. But use the iodin at once and then come to the doctor at once. Reaching the doctor may take five or ten minutes, but the use of the iodin does not take over a few seconds. So it is the immediate disinfection of the wound with the application of dressings very shortly afterward that gives the results.

In 1909 I first introduced this use of tincture of iodin among employees and since then it has become quite universally used among many industries. Several company surgeons still raise objections to its use and cannot see its superiority over other antiseptics. Many employees so have the habit of using hydrogen peroxid that it is difficult to replace this usually inert liquid with the iodin. The actual figures as set forth in a previous publication[1] show conclusively that the results warrant its use. From 1909 to 1912 there was a reduction of 38 per cent. in the number of hand infections. At that time the management became more active in enforcing these rules. In 1912 out of 2,693 accident cases reporting to the doctor's office, 28.6 per cent. became infected. In 1915 out of 5,000 accident cases reporting to the doctor's office 10 per cent. became infected. Most of the infections in 1915 occurred among new employees and all of them except twenty-four failed to follow the instructions concerning the use of iodin and reporting at once. Not a one of the twenty-four who used iodin were infected sufficiently to require opening, neither did they lose any time from work. Thus among the injured employees who use iodin at once and report to the doctor at once, less than two tenths of 1 per cent. become infected.

After an accident has occurred in spite of all our methods of prevention then it is the duty of the preventive surgeon to so institute the best form of active treatment at once that he will secure the quickest recovery, the least deformity, and prevent a fatal termination. Temporizing methods by the surgeon are to blame too often for great losses to both the employee and employer. By temporizing methods I mean trying office treatment or home treatment when the best hospital treatment should have been instituted at once; failing to watch carefully for the earliest indications of threatening complications; leaving the patient too much to the care of an assistant or an intern; and failing to take advantage of every known means of diagnosis and of every known method to attain the quickest and best results.

1. Mock, H. E.: Treatment of Hand Infections from an Economic Viewpoint, Surg., Gynec. and Obst., 1915, **21**, 481.

PREVENTIVE MEDICINE

The common aim of preventive medicine and preventive surgery is so obvious, and yet it is only recently that the two have been mentioned in unison. It was left to the work of a few company surgeons scattered over the country to bring out the indivisibility of the two. A comprehensive plan for the supervision of the health of employees if adopted by all industries would be the greatest movement in this country for preventive medicine, and at the same time would be the greatest safety first movement that they could install. Here again a temporizing plan will not yield the best results. The medical staff must do its medical and sanitation work thoroughly and completely. A mere inspection of employees must not replace a thorough medical examination because it takes less time and is immediately cheaper for the employer; work that should be done by the doctor must not be left to a nurse or trained lay assistant; and conditions in the employees that mean a premature retirement to the scrap-heap must not be tolerated because to correct them means an immediate loss of time. Even temporizing methods, it is true, are better than the old methods, which did not consider in the least the health or life of the employees, but the company physician today must show that the benefits to the employer are in direct ratio to the thoroughness and completeness of the plan which he adopts for the supervision of the health of his employees.

The thorough medical examination and reexamination of each individual is the chief aid in supervising the health of any group of people in intimate contact with each other; therefore, every employee in the active working force should be examined for the following purposes:

1. To ascertain the condition of health of each employee and to give personal advice to those who need it, along the lines applicable to their cases.

2. To discover diseases among the employees in the earliest stages and therefore while still curable. Many diseases of which there was no knowledge are thus discovered, and the afflicted employee is advised as to methods to overcome the trouble or at least to prevent its advancement. Many of these are referred to the family physician months before the patient would voluntarily seek his counsel.

3. To find any one who has contracted a disease that might be communicated to a fellow employee. Tuberculosis is the chief of these diseases. Not only is the working force protected from contamination, but the disease is usually found in such an early stage that practically always a cure is possible.

4. To discover the chronically diseased employee who is still able to work, and to recommend for him a position where he will be efficient and which will not hasten the course of his disease. Thus, the man with organic heart disease would be an inefficient heavy trucker and such work would be of great danger to his life, whereas he would make a good straw-boss or light packer, positions which would enable him to control his disease.

Likewise the medical examination of all applicants for work should be made, not for the purpose of choosing only the strongest, healthiest workers, as such a plan would be too great an injustice to our weaker fellow men, but for the following reasons:

1. To prevent those with contagious diseases from mingling with our healthy employees.

2. To prevent those with serious diseased conditions from going to work, for their own protection.

3. To choose the proper type of work for those with some chronic disease which does not totally unfit them.

Next in importance to the medical examination in supervising the health of the working force is the personal contact between the doctor and each employee, which enables him to advise concerning all matters of health and means of prevention which are suggested by their individual cases. Thus, they are told when a diseased condition is present and how best to overcome it and when they should consult their family physician. They are warned against wrong lines of treatment and the dangers of consulting quacks and advertising doctors, and the uselessness of taking "patent medicines." The personality of the doctor is a most important factor in this personal contact with the employees. He must be a friend, a teacher, and a kindly adviser at all times in order to gain their absolute confidence.

Arguments have been raised against the medical examination of employees, chiefly by leaders of labor unions. They say that unscrupulous employers could adopt such a system for the elimination of all but the very healthiest, and most efficient employees, or for the elimination of undesirable employees among the union help. These objections are worthy of weighty consideration, if any employer adopts this plan from such an inhuman standpoint. But if hand in hand with this medical work there is constructive work on the part of the employer to better the sanitary conditions of the working place, to assist the employee to regain his health, and so to regulate his work that it will not be detrimental to him, then these arguments are at once completely nullified.

We have thoroughly examined employees during the last seven years.[2] During the last three years we have also examined all applicants for work.[3] For the years 1914 and 1915 we examined 15,151 old employees, 27 per cent. of whom were found with definite diseased conditions, while a great number of very minor defects were found but not classified. None of these employees were discharged, but they were advised as to the best methods to overcome or control their diseases, many were given vacations, or free hospital or sanatorium care, others were referred to their family physicians, or when investigation proved they could not afford to pay for special care, this was rendered to them free of charge by the medical staff. Whenever the work of an employee was found to be detrimental to his health he was transferred to some other position: as a rule his health improved and he became a more efficient employee at once. In the matter of tuberculosis among our employees we have cared for 284 patients free of charge, a majority of whom were treated at sanatoriums.

During the same period of 1914 and 1915, 13,764 applicants for work were examined and 19.9 per cent. had definite diseased conditions, but only 3.4 per cent. of these were rejected for employment. In every case a rejection was made only when the applicant had some diseased condition which made work at the plant detrimental to him, or some contagious disease which might be spread to the active working force. These figures and these facts are the strongest rebuttal we can possibly give to the arguments advanced against such a humane system of preventive medicine.

But when such a system becomes more universal, great hardships will fall on the 3 to 5 per cent. physically unfit employees who are unable to secure employment because they cannot pass the medical examinations. Because of these hardships we are brought face to face with another problem which must always go hand in hand with any system of universal supervision of the health of employees, namely, either state or federal control of such a system and either state or federal health insurance laws, insurance against non-employment, and old-age pensions. But these same laws must be so carefully worked out that they will not react as a hardship to some other branch of society, and it therefore behooves the physician to devote much time and attention to this subject.

The sanitation work, the ventilation, the study of temperature and of humidity, the disinfection of departments in which contagious cases have developed, the disinfection of toilets and of cuspidors, and all matters dealing with the sanitary conditions of the working place make up a large portion of the work which must come under the direction of the specialist in industrial medicine and surgery.

Likewise, the personal hygiene of each employee, his exercise and recreation, his housing conditions and the home environments, his personal habits and even his family history are matters which must be included in the scope of this work.

The industrial visiting nurse, who also must have a vision and a social sense, is responsible for the investigation of many of these latter problems, and no plan of medical supervision of employees can be complete without her assistance. Also the industrial dentist is coming more and more into this work as an aid in upbuilding the health efficiency of the employees. A human laboratory for work and research in practically every branch of medical science is found in this field of industrial medicine and surgery. And the company surgeon who takes advantage of it is destined not only to become a skilled, conscientious physician and surgeon, a sociologist, and an economist, but the influence of his work extends from the shop walls to the entire community.

2. Mock, H. E.: Medical Work and Industrial Sanitation, July, 1910.
3. Mock, H. E.: An Efficient System of Medical Examination of Employees, Pr. Nat. Assn. Study and Prev. Tuberc., May, 1914; ibid., May, 1916.

Parinaud's Conjunctivitis.—Surg. G. L. Collins, U. S. P. H. S., in *Public Health Reports*, Dec. 15, 1916, says the health officer should keep in mind Parinaud's conjunctivitis in his search for trachoma. Although he may regard granulations of adenoid tissue in the tarsal conjunctivae and retrotarsal folds as almost pathognomonic of trachoma, several other conditions, as Parinaud's conjunctivitis, may closely simulate trachoma. Collins reports a case in a vigorous young woman, a gymnastic teacher, in whom the conjunctiva of each lid was greatly congested, and at the nasal side of the upper lid were many granulations, and also in the upper retrotarsal fold, where they were crowded close together. The granulations had a peculiar, yellowish, semitranslucent appearance, and examination with a loupe showed minute white areas on the surface, with considerable mucoid secretion, but no pus. A few granulations could also be noted on the epicanthal fold, and a minute subconjunctival hemorrhage on the bulbar conjunctiva. The condition was unilateral and there was an enlarged and tender preauricular lymph gland. The other eye was normal. There were slight constitutional disturbances. The symptoms were characteristic of Parinaud's conjunctivitis, and subsided in two or three weeks under simple treatment. The source of the infection could not be determined.

MEDICAL SUPERVISION OF FACTORY EMPLOYEES

RESULT OF FIVE YEARS' EXPERIENCE*

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The basis of this paper is work done in the Department of Health and Sanitation at the Norton Company and Norton Grinding Company, Worcester, Mass., from May, 1911, to May, 1916.

The medical department in a factory has five functions, as follows:

1. To make physical examinations of all prospective employees, and reexamine all defective employees.
2. To treat accidents immediately after they occur —and subsequent treatments.
3. Examining and advising cases of sickness.
4. The control of sanitation throughout the works.
5. Health publicity.

I will take up these functions in order, and discuss each one briefly, giving our results.

PHYSICAL EXAMINATIONS

The best time to make a physical examination is before the employee is hired. This immediately eliminates any man who is totally unfit for the work to which he is assigned, and prevents contagious diseases becoming established in the shop. Rejections should, however, be made only when they are absolutely necessary, as many men are perfectly capable of doing work in certain departments though unfitted for work elsewhere. A physical examination should be made not only on a prospective employee but also on each employee who is transferred from one department to another for reasons just mentioned. Periodic examinations, about once in six months, should be made on all men having defects of a nature which is serious enough to require inspection.

Completeness of Examination.—We believe that examinations cannot be made too complete. When the department started, there were certain examinations which we did not consider necessary, such as examinations of the feet, and blood pressure. We have since, however, changed our minds as a result of experience. We now believe that the applicant should be completely stripped at some point during the examination and that as thorough examination should be made as in a general hospital on the admission of any medical case. We consider blood pressure a distinct advantage as an indication of possible trouble in the kidneys. This is especially valuable as a time saving device, being much quicker, and simpler than making a urinalysis of all cases. Our rule is to do blood pressure on every man over 20, to do urinalysis on every person under 40 who has a systolic pressure of 150 or over, or a diastolic of 100 or over: all men of over 40 years have a urinalysis regardless of their blood pressure.

REJECTIONS[1]

We arbitrarily reject:

1. All applicants over 45 years of age.
2. All men having only one eye. This because the work about grinding wheels is particularly hazardous to the eyes, even when goggles are worn.
3. All men having vision reduced to ½ in both eyes.
4. All cases of contagious disease, including, of course, tuberculosis.
5. All cases having more than a second degree hernia (using the classification of the Conference Board of Physicians in Industrial Practice).
6. All cases of heart disease with disturbed compensation.
7. All cases of varicose ulcer.
8. All cases of fourth and fifth degree flatfoot where the arches apparently give trouble.
9. Marked hypertension.

We have worked out this list of rejections by rule of thumb. Each cause of rejection has been gone over most carefully and has been decided on only as a result of actual experience.

Since Nov. 1, 1915, we have made 100 rejections. During the same period of time we have examined 2,618 applicants. The causes of rejections are given in Table 1.

TABLE 1.—CAUSES FOR REJECTIONS

Causes	Number
Age (over 45 years)	20
Eye defects	35
Heart defects	2
Lung defects	4
Hernias	32
Venereal diseases	2
Nephritis and hypertension	3
General (numerous defects)	2
Total	100

There has been some question as to the selection of 45 years as a rejecting age. Analyzing the physical examinations of the men rejected on account of age we find the gross defects given in Table 2. All of these defects are enough to disbar a man even though his age came under our limit.

TABLE 2.—DEFECTS IN APPLICANTS OVER 45

Defects	Number
Defects of eyes	9
Defects of ears	6
Defects of hearts	6
Hernias	5
Nephritis and hypertension	9
Pronounced flatfoot	2
Varicosities	1
Defects of lungs	1
Total number of defects	39

In other words, in twenty men over 45 years of age we found thirty-nine defects sufficient to disbar the applicant even if his age were under 45.

DEFECTS FOUND IN EMPLOYEES THAT DO NOT BAR THEM FROM EMPLOYMENT

There are very few men who apply to the Norton Company for work who have no defects. The average workman, though having numerous slight defects, is perfectly capable of doing almost any work in the factory. There are, of course, some departments in which restrictions are higher than others — departments where there is considerable heat, heavy lifting, and more than the average amount of dust. In these departments we try to get the most absolutely fit men that we can procure, provided they have the mental capacity for doing their work. Examining the mental capacity of the prospective employee is a function of the employment department and does not come under our jurisdiction. During the first three months of 1916 we examined 1,379 prospective employees. Forty-three of these were rejected for reasons just given. The last thousand consecutive cases showed the minor defects indicated in Table 3.

The cases of tuberculosis existed among those who were rejected, and many of the persons with hernia

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Rejections are made by employment department. The term "rejections" here refers to medical risk, as reported to employment department.

were also rejected. Each one of these prospective employees was told of his defects, and wherever possible instructions were given to show him as to how this defect might be remedied or be kept from troubling him. It may be interesting to note that several patients with hernia have since our notification gone to the Worcester City Hospital, had curative operations and later become employees of the Norton Company. Several other employees having marked defects of both eyes have procured glasses remedying these defects, and have been placed in departments where there is no danger of foreign bodies getting in the eyes.

TABLE 3.—MINOR DEFECTS

Defects	Number
Defects of the eyes	100
Defects of the ears	23
Defects of the nose	148
Defects of the throat	35
Defects of the teeth	569
Defects of the neck	16
Defects of the heart	62
Defects of the lungs	17
Defects of the extremities	339
Defects of the inguinal region	106
Genito-urinary defects	53
Defects of the spine	3
Defects of the skin	24
The more serious defects consisted of	
Defective vision in both eyes	56
Endocarditis, mitral insufficiency	41
Pulmonary tuberculosis, active	3
Flatfoot	311
Hernia (second degree or more)	50

Blood Pressure.—Our experience with blood pressure has tended to confirm the general experience where large numbers of blood pressures were taken. In the last thousand cases, dividing the men by decades we found the average as given in Table 4.

TABLE 4.—BLOOD PRESSURE

Age, Years	Systolic	Diastolic	Pressure Pulse
From 20 to 30	129.5	88.5	50.3
From 30 to 40	135.1	89	47.2
From 40 to 45	140	91.6	48.2
From 45 to 50	158.8	92.8	66
From 50 to 60	167	100.8	72.5
From 60 to 65	178	100	77.5

I believe that the average systolic pressure is a trifle higher than normal on account of the excitement of the examination. This fact has been brought out by Dr. Roger I. Lee, who came to this conclusion after examining the Harvard medical students. The averages, however, are pretty much within normal limits. It is rather interesting to note the increasing pressure pulse as age increases, remaining about the same for the first three decades and then rapidly climbing.

To sum up the result of five years' experience with physical examination of employees in a factory of about 2,800:

1. The average workman does not object to physical examination, and the majority of them are pleased to have such an examination made.

(*a*) On account of the information it gives them.

(*b*) Because it throws them in intimate contact with the doctor to whom they are going to apply afterward in case of sickness or accident.

2. A physical examination cannot be too complete. The most complete form of examination the average man requires takes ten minutes, provided a urinalysis is not done.

3. Periodic examinations of markedly defective men tend to keep such employees in good condition and prevent an increase in their defects.

4. As it is impossible to employ men who have no physical defects, a physical examination enables us to place men in departments where they will suffer the least risk and maintain the highest degree of physical efficiency.

5. A fresh examination each time a man is transferred from one department to another prevents the possibility of a man being assigned to work for which he is not physically adapted.

6. A periodic examination of the entire force once a year is not necessary because:

(*a*) The examination is made each time a man is sent from one department to another.

(*b*) All men having any sickness or accident apply to the hospital and are there examined if there is anything indicating the necessity for such an examination.

7. The number of rejections, even with a rather highly restricted list of defects, is very small, and is no argument against but rather an argument for the advisability of physical examinations.

HANDLING OF ACCIDENTS

All accidents occurring at the Norton Company and the Norton Grinding Company receive treatment in the department of health and sanitation. This has been so thoroughly drilled into the foremen that we invariably see accidents within fifteen minutes of the time that they occur, except in cases of foreign bodies in the eye. In these cases men sometimes do not realize that they have received a small foreign body in the eye and do not report to the hospital until the next day, when reaction is beginning. The result of this prompt attention to all injuries has reduced our loss of time from accidents to the minimum during the five years the department has been in operation. We have never had a case of sepsis. I do not feel that I can make the statement that we have never had a case of infection, for in several cases there has been a single drop of pus, or a moderate exudation from a wound. By sepsis I mean pain, heat and redness accompanied by swelling. As we have been treating on an average of 241 accidents a month, it will be seen that the methods we use must be efficient. Although these are undoubtedly those used by the majority of shop hospitals, I will give our routine:

The wound is first thoroughly washed with commercial gasoline. The gasoline is slushed on and used like water, being poured not only over the wound but into the wound itself, and a rather vigorous scrubbing is given the surrounding skin with sterile gauze. Immediately after this, tincture of iodin, U. S. P., is poured into the wound and over the skin. This is allowed to dry and a sterile gauze dressing is applied. If for any reason we suspect the wound of being pretty dirty, a second dose of iodin is poured on after the first is applied. My experience with this method of cleaning is not confined to the Norton Company, as I have used it in my private practice and active service in two large hospitals. As there has been some discussion as to the efficiency of iodin, my own experience may be summed up as follows:

Iodin to be 100 per cent. efficient as an antiseptic must be used within thirty minutes of the receipt of a wound. The efficiency decreases 25 per cent. every fifteen minutes beyond this time. After two hours it is almost useless.

The immediate treatment of accidents undoubtedly reduces the time of disability. If sepsis is eliminated, fractures promptly set, and backs strapped immediately after strains, many patients are able to return to work within a very short space of time in spite of apparently severe injuries.

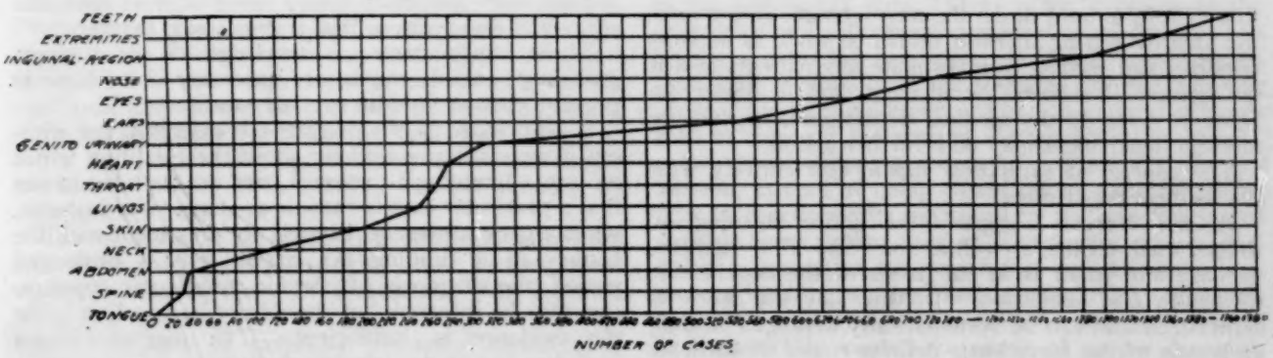
During the month of April at the Norton Company we treated 474 accidents, but one of which was severe enough to draw compensation. That is, there was only one man injured severely enough to keep him out of work over fourteen days. During the year from May 1, 1915, to May 1, 1916, we treated 2,895.

The facilities of the shop hospital for the after-treatment of accidents has never been thoroughly brought out. The peculiar situation of the shop hospital enables it to get a rapidity of cure in both accidents and sickness which cannot be reached by any other method. There is no other method of treating ambulatory patients by which the patient can be brought to the doctor at a moment's notice and by which as many treatments as are required can be made during the day. The two weaknesses of the general hospital outpatient department are, first, that the patients frequently do not follow advice or fail to report, and second, that in cases requiring redressings these must be done by the patient at home. The shop dispensary, however, provides a place where the men may have dressings done in the shortest possible time by the most competent dressers, and by a follow-up system it can be definitely arranged that a patient will report at regular intervals through the day for such dressings.

To sum up, our experience with accidents in the last five years has convinced us that: 1. A very little inducement will bring every accident, no matter how slight, to the shop hospital for treatment. 2. The shop hospital is the place to treat accidents of all kinds, and first aid should not be done in the shop unless it is absolutely necessary to save life. 3. Gasoline followed by tincture of iodin is the best antiseptic, and if used within fifteen minutes is practically sure of producing a clean wound. 4. Safety engineering has reduced the number of serious accidents to the absolute minimum, but is unable to reduce the very slight minor cuts and smaller injuries, the latter depending on the personal element of the employee.

TREATMENT OF SICKNESS

Our treatment of sickness is prophylactic, not curative. When a man is sick enough to need a doctor we send him to his family physician or to the hospital. If he has no family physician we give him a list of doctors from which to choose. Our idea of handling sickness is to make a correct diagnosis and to treat the minor ailments which if not attended to promptly may lead to more serious conditions. Such cases are sore throat, coryza, beginning bronchitis, constipation, diarrhea, muscular pains and similar slight ailments. For



Number of defects and regions affected found by examination of 6,000 employees.

I have been surprised at the speed with which infections clear up when treated in this way. As I mentioned in my previous section, we have had no sepsis from any accident; but in many cases we have had men apply to the shop hospital with infections which they have incurred from neglected wounds occurring outside the works when home treatment has been used. Furunculosis is very common, and we have, I regret to say, a number of cases of foreign body in the eye in which the patient has not realized that the foreign body was present until twenty-fours or more have elapsed. Four-hour dressings of infections will, I believe, curtail the time of disability almost 50 per cent., and, moreover, the employee will keep on working because he knows he will get attention with little loss of time. In foreign bodies of the eye, after the foreign body has been removed, we have the patient report every three hours to receive hot compresses and instillations of argyrol. We seldom have an eye which is not cured completely in forty-eight hours, and in the majority of cases men lose no time while the treatment is being carried on. The same applies to some medical conditions, particularly tonsillitis and other forms of sore throat. In these cases we paint the throat two or three times a day with iodin and glycerin, providing a hot gargle for the patient every three hours.

such treatment we have a small supply of simple drugs which in the majority of cases is efficient. If we have to treat a man more than twice for a condition requiring medication, we immediately advise him to go to an outside doctor. Any man who is really sick we endeavor to diagnose, but do not attempt to treat him ourselves. When a man has a temperature of 100.4 he is sent home and not allowed to return to work until he has presented himself to the hospital in perfect condition. I wish it to be distinctly understood that I do not believe the function of treating sickness belongs to the average shop hospital, but I do believe that many diseases may be prevented by immediate simple treatment, by observation and advice. As I have before said, I like to consider the medical function of the shop hospital as a diagnostic clearing house.

During the past year we have treated 3,474 cases and have, I believe, materially reduced the disability from sickness, by simple preventive measures.

To sum up:

1. Our treatment of sickness is preventive, not curative.

2. Our effort in serious sickness is to diagnose and see that the man gets immediate attention from his family physician or from a specialist where one is indicated.

3. We believe that a man with a temperature of 100.4 should not be allowed to work and should not be allowed to return to work until his temperature has reached normal and all signs of the disease have disappeared.

4. By arranging that all men feeling sick must come to the shop hospital, we have prevented a large amount of sickness and have isolated a number of contagious diseases in the last five years, besides in many cases saving life through early diagnosis in such cases as acute appendicitis.

6. Such treatment will materially reduce the time lost by employees throughout the shop.

We believe the follow-up system by which the absent employee is visited by a member of the employment department when reported from work is of the greatest value to the medical department. In this way we can be sure that: (*a*) no man has received an accident and failed to have it cared for at the medical department; (*b*) an employee has not a contagious disease which is unknown to the medical department; (*c*) an employee is sick and has not received adequate medical care on account of his financial condition; (*d*) a patient who has been coming regularly to the hospital is not absent from work because of some trouble arising from the injury.

The follow-up system, therefore, has a double function. First, to hunt down the men who are absent with the idea of getting them to return to work as soon as possible, and second, to investigate any patients absent on account of sickness or accident, and to report the same in detail to the medical department, so that the medical department may take further action.

The control of sanitation should rest entirely with the medical department.

At the Norton Company the entire cleaning of toilets, wash-rooms, as well as the removal of rubbish, garbage and paper is in the hands of the department of health and sanitation. In this way the work is centralized and can be systematically arranged so that each man of the force has a definite round of work to perform. Although the company has been expanding greatly in the last two years, and as a result the toilets and wash-rooms have been badly crowded, thanks to careful, systematic work there has been no complaint whatever. One of the things with which we have had most difficulty is to find a good type of cuspidor. The one which we now use is made of stone, is almost unbreakable, and cannot be upset. It is filled with sand and chlorinated lime, and has proved absolutely satisfactory.

HEALTH PUBLICITY

Much educational work can be done throughout the shop by means of leaflets written in simple, clear language on the subject of hygiene and general medicine. We have been publishing such leaflets monthly, enclosing them in pay envelopes, and their reception has been most gratifying. The best bulletins of this type are probably those recently approved by the Conference Board of Physicians in Industrial Practice.

37 Pearl Street.

Feeblemindedness.—The term feebleminded is used generically to include all degrees of mental defect due to arrested or imperfect mental development, as a result of which the person so afflicted is incapable of competing on equal terms with his normal fellows or managing himself or his affairs with ordinary prudence.—American Association for Study of the Feebleminded.

THE PREVENTION OF CHRONIC MIDDLE EAR SUPPURATION *

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When we consider the frequency with which it occurs, the resistance it offers to treatment, the damage it does to hearing, and the risk it incurs to the life of the individual, the subject of chronic middle ear suppuration becomes one of importance, and the question of how best to prevent it deserves the time and attention of the section that the chairman has seen fit to assign to it.

The prevention of disease is the highest aim of the medical profession. To accomplish successfully this aim we must possess first a knowledge of the disease that we hope to prevent. A comprehensive knowledge of any disease implies a knowledge of the pathology and diagnosis. This applies especially to the subject of chronic middle ear suppuration, for the reason that it is a disease capable of manifesting itself in a variety of ways and liable to many complications. It is not only necessary to recognize the disease when present, but we must actually anticipate it when certain factors are favorable to the development of the disease. Thus we see that a knowledge of the etiology is even more important than a knowledge of the pathology and diagnosis, in that it goes a step farther.

These requirements, a knowledge of the etiology, pathology, and diagnosis, are necessary if we hope to prevent chronic middle ear suppuration.

A knowledge of the diagnosis is essential, for without it we can know nothing about the condition which we are attempting to prevent, nor are we able to say that a particular case is chronic or acute. For instance, when a patient presents himself for treatment with the history of a running ear lasting over a prolonged period, the diagnosis of chronic middle ear suppuration may be inferred, but should not be concluded, for the evidence is insufficient. The diagnosis must include a knowledge of every feature of the case ascertainable from all available sources of information, including the history; the functional hearing and static tests; the otoscopic examination; the rhinoscopic examination; the skiagraphic examination; the examination of the secretions from the middle ear for consistency, color, odor, etc.; the microscopic examination of the washings from the ear for cholesterin or other crystals; for micro-organisms, including the smear and cultural methods of examination in order to ascertain the nature of the infecting organisms; blood and urinary examinations; in many cases a neurologic examination, and indeed occasionally a general physical examination of the entire body. There is no disease that requires a more exhaustive examination. By such complete methods only are we able to determine, with some degree of certainty, the pathologic conditions that exist in the middle ear, eustachian tube, attic antrum region and mastoid cells; whether the suppuration is an acute or chronic process; whether it is tending toward spontaneous recovery or extension; whether the extension is toward the inner ear or intracranial structures; whether cholesteatoma is present or not; whether the suppuration in the middle ear is producing a detrimental effect on the patient's general condition of health or vice versa. Besides, from the

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

knowledge obtained by a thorough examination combined with experience gained in similar cases, some idea may be formed as to the prognosis with and without treatment and the probable effects of selected treatment. I use the words "selected treatment" advisedly, for the reason that treatment cannot be routine in a disease in which the conditions are so variable as they are in chronic middle ear suppuration.

We have referred to the importance of a comprehensive diagnosis and how the diagnosis depends in a large measure on our knowledge of the pathology, but only in a direct, physical-mathematical sort of way, as determined by laboratory methods. On the other hand, the indirect (predisposing) symptomatic, and, we might add, the physiologic factors, as determined by clinical methods, are not included in the study of pathology. It is these latter features that play an important rôle in the individual susceptibility and variability in the manifestations and course of the disease, so that it would hardly be fair to dismiss the subject of etiology with a mere reference to the pathology.

Since chronic middle ear suppuration is the sequela of acute middle ear suppuration, the prevention of the chronic form is possible only when we are able to arrest the suppurative process while it is still in the acute form. Just how long an ear may discharge before we may class the condition as a chronic middle ear suppuration is a question difficult to answer. Probably no two authorities would agree. It was taught in the Politzer clinic that an ear that discharged for more than two years might be classed as a chronic condition and should be operated on radically, while a discharge lasting for a shorter time was classed as acute and should be operated on after the simple method. Politzer then cited a limited number of exceptions to this rule.

The question of duration is a relatively important one when considered along with other factors, more especially the influence of treatment. For instance, if an ear continues to discharge for more than six months in spite of carefully conducted conservative treatment covering a period of two months or more the writer would be inclined to consider the case chronic, but not necessarily one requiring radical operation.

The treatment of acute middle ear suppuration depends on many factors, local or distant, recent or remote; the presence or absence of complications, the susceptibility of the patient to a particular infection, and the vitality of the patient, measured by his general resistance to all diseases and his power of recuperation.

Local factors that tend to prolong a case of acute middle ear suppuration may exist in the form of adhesive bands in the middle ear spaces, left there by one or more previous attacks of acute secretory catarrh; narrowing of the eustachian tube anywhere along its course, the result of organized exudate following acute secretory catarrh. Anything which tends to obstruct the free drainage of pus from the middle ear spaces becomes a factor of importance in prolonging an acute middle ear suppuration. The normal route for the escape of middle ear discharge is down the eustachian tube, which is at the same time the most favorable. The reason why discharge finds its way out through a perforation in the drum membrane in the case of acute suppuration of the middle ear is because the normal route down the tube is temporarily closed. It follows, therefore, that when the normal route continues closed beyond a certain period, the suppuration tends to last proportionately long. Drainage down the eustachian tube may be obstructed by inflammatory edema of the mucous membrane, but this is usually transient. The more important obstructions are the organic, and the most frequent of these is to be found in the narrowing that follows the organization of exudate from acute tubal catarrh. The loss of the cilia with metaplasia of the epithelium, in spite of patulousness of the tube, may act as a relative obstruction in that drainage is not favored, as is the case when the epithelium is in normal condition. Very large adenoids may obstruct the orifice of the tube and interfere with normal drainage. A frequent location for obstruction is to be found at the upper end of the tube, or, more properly speaking, in the pretympanum. In this location membranous diaphragms are sometimes formed. The opening in this diaphragm may vary in size at different times in the same individual.

Obstruction in the middle ear cavity may be found in the form of so-called adhesive bands, which tend by their presence to close off partially dead spaces. In one case it may be the attic region, in another the antrum region, and less frequently the hypotympanum. These bands may exist from birth, due to incomplete absorption of the connective tissue that existed there in the embryonal state. More often it is due to the deposition and subsequent organization of exudate following a catarrhal condition. It is this same process that leads eventually to the so-called chronic adhesive process of the middle ear. When the adhesive bands tend to close off the antrum the possibility of complicating mastoiditis is increased. The way to the antrum, instead of being closed off by material bands, may be concentrically narrowed by the organization of exudate from similar causes. Temporary closure, partial or complete, of this region may result from inflammatory swelling of the mucous membrane. The perforation in the tympanic membrane may be too small or unfavorably located to permit of proper drainage, in which case it would be well to enlarge it. My impression is that far more attention is paid to the size of the perforation in the membrane than to the condition of the tube, when in fact obstruction in the tube is by far the more important factor of the two when both conditions are present. The first place to look for imperfect drainage is in the tube; correct it and the size of the perforation often becomes a factor of secondary importance. On the other hand, I do not wish to criticize any one for giving attention to the size of the perforation, but rather for neglect of the tube. Anything that obstructs the free flow of pus from any part of a suppurating middle ear tends to prevent spontaneous recovery and therefore to chronicity. The exact nature of the obstruction should be sought and corrected by the simplest known method. If the obstruction is due to necrotic areas in the bone, with granulations, or to cholesteatoma, or to large polyps, the condition is already chronic, and a discussion of them would be foreign to our present subject.

When the obstruction can be located and its nature determined, the logical thing to do is to remove it, if possible, by the simplest means at our disposal. When these fail, as they do at times, more radical methods must be adopted, for neglect of drainage will surely result in chronicity if not complications. The question of correcting an obstruction narrows itself down to the diagnostic judgment of the otologist in locating it and

his manipulative skill in handling it when it is located. One thing that I have observed and wish to emphasize is the frequency with which local inflammatory swellings acting as obstructions clear up promptly after a simple mastoid operation. In other words, a simple mastoid operation will side-step an otherwise irremovable barrier to drainage. Nor is this to be wondered at when we consider that an organic obstruction located between the middle ear cavity and the antrum will drain the posterior spaces better by a posterior opening, while the anterior spaces will drain better anteriorly.

A mastoid operation is not to be urged except when other more simple methods have been tried and have failed. On the other hand, the operation should not be postponed in the presence of the indications for operation. By temporizing we may fail to clear up the case by the simple operation and thus necessitate a more radical operation later.

Among the neighboring and more distant conditions that may tend toward prolonging an acute middle ear suppuration may be mentioned adenoids, when extremely large, by blocking the pharyngeal end of the eustachian tube. This has been referred to previously when discussing the question of drainage. Aside from the fact that enlarged adenoids may act mechanically to obstruct drainage, they may menace the health of the ear in other ways. For instance, the presence of adenoids increases the susceptibility of the patient to infections, and these again tend to increase the size, for the time being, of the already enlarged adenoids. By this means it not infrequently happens that the patient with an acute middle ear suppuration experiences aggravations and added infections from repeated colds; furthermore, the original infection in the nose and throat is prolonged because of their presence. When such conditions prevail it is important to remove the adenoids at a time best suited to the circumstances.

Enlarged and chronically diseased tonsils act in a similar manner, but less directly than do enlarged adenoids. Chronically enlarged tonsils are more susceptible to acute infection than normal tonsils and there is no telling just when a flare-up is going to occur; so that in a case of acute middle ear suppuration that does not tend toward recovery within a reasonable time it is a safe plan to remove the enlarged tonsils along with the adenoids. Success does not always crown our efforts for the reason that there may be other factors tending to make the case chronic.

Nasal obstruction may seem to some a far-fetched cause of chronicity in middle ear suppuration. Nevertheless, experience teaches us that the correction of nasal obstructions act beneficially in all pathologic conditions of the middle ear. Different theories have been advanced to account for it, which I will not take your time to discuss at present. The importance of nasal obstruction in its bearing on suppurative middle ear conditions, although previously recognized by the writer, was further emphasized about a year ago, when, after failing to clear up a case of subacute middle ear suppuration within a reasonable time by the usual conservative methods, the condition promptly cleared up after a submucous resection of the septum performed by another physician to whom the patient had gone. Embarrassing as it is to confess it, the case is cited because of the lesson it teaches.

A common cause for delayed recovery in acute middle ear suppuration is to be found in the so-called chronic infections, tuberculosis and syphilis, especially the former. A large percentage of the persistent cases of acute suppuration in infancy are tuberculous, when we frequently find the ear conditions associated with enlarged cervical lymphatics. In some of these cases the ear condition had its origin in a tuberculous infection in the middle ear, perhaps masked by the mixed infection that usually follows the breaking down of tubercles. In other cases the primary condition in the ear was due to some other infection, the process never becoming tuberculous; however, the tuberculosis elsewhere in the body acts detrimentally to the health in general and prevents prompt healing of the suppuration in the ear. Early evidence of caries suggests a tuberculous process in the middle ear.

In either event, care of the ear alone will generally fail to bring about a cure. The case should be treated as one of tuberculosis, along general lines, as in the case of tuberculosis in other parts. As is well known, the operative treatment of tuberculous ear conditions is prone to be followed by tuberculous meningitis, especially where the patient's general health is ignored.

Concerning syphilis of the middle ear much less is known and fortunately the condition is rare, but the same remarks apply in a general way to this process as to tuberculosis. Diabetes is prone to delay healing in acute middle ear suppuration if it does not actually contribute largely to its etiology. It should be suspected in all patients over 40 years of age when there is delayed recovery of suppurative processes generally, including those in the ear. Sequestration of the labyrinth as a whole or in part calls for a careful urinary examination for sugar and acetone. To treat successfully the ear condition attention must be given primarily to the diabetes.

It is needless to cite all the conditions that may contribute to chronicity in acute middle ear suppuration; suffice it to say that any disease of the kidneys, heart, lungs, gastro-intestinal tract or elsewhere which tends to depreciate the patient's health and vitality tends also to prolong acute middle ear suppuration and make it chronic; while any form of treatment directed toward the correction of these organic conditions contributes to the healing of the middle ear suppuration. Lack of vitality may exist from known causes, including some of those already mentioned; besides lack of proper hygiene, improper clothing, insufficient nourishment, etc.; furthermore, lack of vitality may result from unknown causes often inherited, general weakness due to lack of care of the mother, alcoholism in the parents, etc. The child need not be puny as an evidence of lack of vitality, for on the contrary it is sometimes fat, however, a flabby fat. Lack of vitality is also found in the feebly old.

Lack of vitality manifests itself in two ways. First, by the lack of reaction to disease, the case showing asthenic from the start. There is but slight general reaction, shown by the relative lack of fever and scarcity of symptoms. There is but slight local reaction; the swelling of the parts is but moderate and the pain insignificant; while the patient's wants are few. Nevertheless he looks sick and is sick. The tendency is for the infection to spread rapidly; it does not become circumscribed by the normal process of lymphocytosis.

Another manifestation of lack of vitality is evidenced by the manner, or rather lack of manner, in which the patient responds to treatment. Remedies aimed at stimulating the patient generally or the parts

locally fail to do so, but more often have the opposite effect, when the prognosis becomes bad indeed.

Complications by way of extension of the suppurative process to neighboring parts may be a cause for delayed recovery in acute middle ear suppuration. The most frequent extension is to the mastoid cells, with resulting mastoid abscess; less frequently to the internal ear, the lateral sinus, the dura and other membranes of the brain and the brain itself. It would take entirely too much time to discuss these various conditions in a limited paper. Nevertheless, they are important factors that deserve careful consideration and study, and should be borne in mind, if not anticipated, in all cases of delayed recovery. This calls for a searching examination, suggested in the earlier part of the paper, for by it alone are we enabled to approximate an exact diagnosis in the full sense of the term.

It may be well to mention the fact that none of the complications arise suddenly, even in those cases in which they appear to, for on the contrary we generally find prodromal symptoms of longer or shorter duration. These prodromal symptoms are generally due to a serous form of inflammation due to the action of bacterial toxins that filter through the bony partition that separates the infected area from that which is threatened. For the alert diagnostician, therefore, sufficient time is generally allowed to intercept the more dangerous suppurative form of inflammation.

Susceptibility to a particular organism, lack of immunity or failure to generate proper immune bodies in sufficient quantities may be a cause of chronic middle ear suppuration. Theoretically the vaccine treatment should be ideal for this condition. In behalf of this treatment a great deal was promised a few years ago. I almost hesitate to confess what little service the treatment has been to me. I tried it early and carefully and over a long period, and was encouraged at first, thinking I had at last found a panacea; but later disappointment came and the disappointments were repeated. Autogenous vaccines were used when the time and circumstances permitted; when they were not used the stock preparations were. When the results were apparently most brilliant with the vaccines the conditions were favorable and the same results were duplicated in other cases in which vaccines had not been used. In the most trying cases the vaccines failed me as did other methods. There is a field for vaccines, but it is a limited one. I have not given up their use, in spite of my many failures to obtain results with them. If the preparation of the vaccines is all right, failure to obtain results would seem to show that we are not on the right track, and the cause of the chronicity must be sought in some other factors previously referred to.

My effort has been merely to outline some of the causes of delayed recovery in acute middle ear suppuration, the prompt cure of which would mean the prevention of chronic middle ear suppuration.

The Heritage of the Profession.—We are a curious mixture of heredity and environment—a curious blend of optimism and pessimism. Our heritage is a glorious one, for we present an unbroken line of professional workers with one ideal which was old before the Christian era. From the time Hippocrates taught his disciples at Cos to the present, the one great idea, the one great controlling thought, has been to find the truth, and, having found it, to use it for the benefit of mankind. The truth sought for has never been sought that it may be put to the base use of man's destruction.—J. M. Putnam, Address before Buffalo Academy of Medicine.

NONOPERATIVE TREATMENT OF OTITIS MEDIA*

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Chronic suppurative otitis media is rather easily cured in a large number of cases if proper methods are adopted, but it is exceedingly difficult to obtain men with sufficient self-abnegation, one might say, to carry them out. I refer here especially to our public clinics, in which we find that assistants do not give the attention to nonoperative treatment of chronic suppurative otitis media that they should. Such work is regarded as an uninteresting grind; hence the tendency is all toward hastening these patients to the operating table.

The proper treatment depends on the location of the area of the middle ear involved, that is, whether the disease is more or less located in the tube, the cavum or the mastoid portion of the middle ear; on the stratum that is involved, that is, whether it is relatively superficial, the epithelial structures being most affected, or the tissue under the epithelium, or whether it is the periosteal layer and bone. You know the mucoperiosteum, as its name would indicate, serves two purposes, as a mucous membrane and as a periosteum, the bone beneath deriving its nutrition immediately from the mucoperiosteum. The treatment also depends on the character of the pathologic process, that is, whether it is merely a pus-producing microorganism, being a streptococcus, staphylococcus, or one of the various forms of diplococci, whether it occurs as the result of diphtheria or scarlet fever, or of tuberculosis or syphilis.

Tubal disease is very rarely purulent. Large quantities are blown out with the catheter. Purulency in a discharge from the ear means, as a rule, disease of the bone. When the discharge from the tube is purulent, it indicates involvement of the tubal cells, a series quite separate from the mastoid system, and calls for operative intervention; obviously, not the so-called radical operation, but one outside the scope of this paper to describe. The mucus or purulent mucus comes invariably from the tissues above the periosteal layer of the mucoperiosteum. The mucus from the cavum is exceedingly scant, the moisture here being secreted by the surface epithelium; there is little or no glandular tissue in the cavum. In the tube these structures are quite evident, being more abundant at the pharyngeal opening and decreasing as the isthmus is approached, where it is absent, and again gradually increasing toward the caval opening. The perforations in the tympanic membrane from tubal disease are situated in the anterior portion of the pars tensa practically always. They are usually large in chronic cases, but may be small. They are central and never marginal in uncomplicated tubal disease, that is, an area of tympanic membrane intervenes between the perforation and the annulus. In centrifuging this discharge we find no evidence of bone cells or bone chips. This discharge may be quite abundant, may be quite fluid, is usually stringy and tenacious, but not purulent. This discharge may continue a long time, for years, more or less, with exacerbations occasionally, diminishing to a point at which the patient scarcely notices the discharge, or completely ceasing for a time. But it is chronic and continuous in many cases. The treat-

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ment should be directed to the tube. These are the cases that depend for their continuance on pathologic conditions outside of the aural structures per se. This has been sufficiently brought out in preceding papers. Besides removing the associated pathologic conditions in the nose and postnasal space, we should get rid of the hyperplastic tissue in the tube itself. This may be done by application to the tube by means of the eustachian catheter, applicator, Weber-Liel catheter or syringe. Schwartze long ago recommended that in such cases the tube be syringed out. This can be done through a catheter, the irrigating fluid coming through the perforations of the tympanic membrane. We should, therefore, be careful in these cases to have a large perforation, a perforation of proper size made by the condition or artificially by surgical enlargement. The irrigating fluid we use for this purpose should be nonirritating. A normal salt solution is ideal. Nitrate of silver may be applied in these cases. A small wire, preferably not silver wire, one strand being wound about another, makes a very cheap and efficacious applicator for this purpose. A small piece of cotton is wound on the end and this is immersed in the nitrate of silver solution, and carried to the cavum. In such operations the hard rubber catheter should be employed. One should begin with a low percentage, 2.5, and increase, according to the resistance of the patient, to 10 per cent. This should be carried through the isthmus to the caval opening of the tube. We may apply the medicament to the tube with a syringe fitted into the catheter, but this method is less effective.

In a majority of cases, when uncomplicated by diabetes, syphilis, etc., or when the tubal cells are not involved, this will bring such a discharge to a close. In case, however, these patients do not recover, then the question comes up whether ossiculectomy is permissible, or whether we should take away a large portion of the tympanic membrane, establish a permanent opening by way of the external auditory canal, and by some method endeavor to seal up the eustachian tube and destroy the tubal cells.

Now we come to inflammations of the cavum. For descriptive purposes anatomists have divided the middle ear into the tube, the cavum and the mastoid cells. As regards the pathology, these divisions do not hold. They are artificial, in other words. The middle ear begins with the pharyngeal opening of the eustachian tube and ends with the most remote pneumatic space of the mastoid, all being covered by a membrane of unbroken continuity. We may have these so-called superficial inflammations that do not involve the bone, but the covering of the bone, extending from the tube to the cavum, and even the mastoid cells themselves. It is a rarity to find either an acute or chronic inflammation limiting itself to any one division of the middle ear. It is in the epitympanic space that we behold the anatomic conditions which tend to perpetuate even simple inflammation, because of insufficient drainage conditions. I refer to those innumerable little pockets in the epitympanic space formed by the various ligaments that attach the malleus and incus to the surroundings, all covered with mucosa. For a long time undrained, infectious material causes the mucosa to take on the usual inflammatory changes, causing a discharge which resembles that from pure tubal disease. In a large majority of these cases the perforations will be anterior or posterior to the manubrium, and in the pars tensa.

How are we to get at these little pockets? The best way is by irrigation through the eustachian tube and through the opening in the pars tensa. This can be done by means of the epitympanic cannula. It can be done through the tube itself by the Weber-Liel catheter, a catheter made of woven silk, which is introduced through the eustachian catheter to the cavum, or to the isthmus, and the fluid forced in through the epitympanic space by means of a syringe. I do not hesitate to do this. I believe in these chronic cases the danger of forcing infectious material into the antrum is more or less, preferably more, fallacious.

Here comes in the use of the boric acid and the dry gauze drain. There was a war preceding the present war in Europe by some years, between the various camps in Germany, Munich and Halle being the respective citadels, and it became almost as deadly as the present conflict, one camp standing for the irrigation of the ear and battling against the dry method, the other upholding the standard of the dry and bitterly militating against the wet method. Now we all know that irrigation has its place. It has its place to remove débris, to remove secretions. But we should be very careful how much we irrigate the ears in chronic otitis media suppurativa. There is no doubt that there are cases in which injudicious irrigation only perpetuates the discharge; but when we find that this is true, all we have to do it to use either a boric acid pack or a dry gauze drain. The dry gauze drain that I prefer is one made from xeroform gauze, one-half inch wide, packed against the perforation in the tympanic membrane, not pressing it, but in contact with it, and changed as often as this drain becomes moist. Or the boric acid will produce results in cases in which the dry gauze drain will not, and this is especially so in cases in which the promontory of the cavum is largely exposed, in which perhaps the malleus handle has become necrotic and disappeared, and in which the mucoperiosteum of the promontory is granular. In these cases, if the dry gauze drain does not produce dryness or a decrease of secretions, the head is bent to one side and the whole external auditory canal is tamped with boracic acid. This can be done, of course, only in cases in which the perforation in the tympanic membrane is large.

Granulation tissue in the cavum, projecting as a polyp through a perforation above or below the short process of the malleus or covering the promontory as a sodden mass, means that profound changes in the circulation of the mucoperiosteum have taken place, and that therefore the bone beneath has become more or less involved. This should be removed by snare or cautery (chromic acid, iron perchlorid, trichloracetic acid), with proper precautions. Alcohol, with or without salicylic acid or boric acid, is a most useful application in this class of cases, as well as in small cholesteatomas of Prussak's space.

Now we come to the cases in which the mastoid is involved, and these are cases in which the bone must be taken into consideration. Here we may have perforations in the pars tensa, or most frequently in Shrapnell's membrane; these are usually situated at the periphery of the tympanic membrane. These are usually cases of cholesteatoma produced by the overgrowing of the epithelium from the auditory canal into the epitympanic space, which causes pressure, and this pressure causes destruction of the bone within the antrum and mastoid. This is not a condition which

necessarily demands operation. It is our duty to ascertain the extent of the disease. I have cured numerous cases of this kind, when small and not too old, by the use of the epitympanic cannula and alcohol. This epitympanic cannula is inserted through the perforation of the epitympanic space, or in case there is a fistula, posterior or anterior, and that is washed out, and frequently I wash out large masses of cholesteatoma. After this I either pack with boracic acid or dry gauze.

How do we know the mastoid is involved? By the history of the patient, as to whether there have been symptoms of spontaneous pain or tenderness on pressure, of swelling back of the mastoid at the beginning of the otitis media; as to whether the discharge produced is purulent; as to whether the perforation is situated in the pars tensa or pars flaccida; by the skiagraph; by the recovery of cholesteatomatous tissue from the washings; by the presence of cholesterin crystals and bone plaques in the centrifugalized pus; by the presence of symptoms indicating meningeal or labyrinthine irritation. Certain groupings of these symptoms indicate radical operative procedures, but this subject cannot be even touched on in this paper.

I have just two more points: first, as to suction. That has been tried a great deal. Personally, I have seen very little good come from it. I do not believe, however, that it does harm or that it may be dangerous. It should certainly be tried if any one would like to try it. In one sphere it is especially useful, and that is in diagnosis as to the region whence comes the pus.

Second, as to vaccines: I have seen only one kind of case of chronic suppurative inflammation in the middle ear benefited by vaccines, and that was a case in which the epitympanic space was involved, characterized by a considerable discharge of mucus, and here we have found in two cases a pure culture, in one the staphylococcus, and in the other staphylococcus greatly in excess of the other kinds of bacteria. Here the autogenous vaccine produced a cure in a little over two weeks in one patient who had been under treatment for as many months.

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THE END-RESULTS OF TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA *

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The end-results of treatment naturally fall under two heads, namely, the nonoperative and the operative.

In nonoperative cases the results depend much on the correctness of the diagnosis. In any case that is, in fact, a nonoperative one, the end-result should always be a cure of the discharge and improvement of function, provided the cause of the aural discharge is not a constitutional one, such as syphilis or tuberculosis, and there is no labyrinthic involvement present. Many cases that are properly classified as nonoperative in so far as concerns the ear are, nevertheless, operative in the sense that the environment of the ear is bad, so bad indeed that operative measures for the improvement of nasal breathing are necessary. In such as these the end-results of treatment depend much on surgical means for the removal of infectious foci of the nose, nasopharynx or pharynx.

We may, therefore, dismiss the nonsurgical aural cases with the statement that when assured that any given one is actually in the nonsurgical class, cure should in the vast majority of cases be expected, and the hearing power should usually be improved.

The end-results of the surgical treatment of chronic suppurative otitis media depend on many things.

1. The age of the patient: This, in my own experience, has had little to do with the outcome of surgical treatment, further than that the radical measures necessary to cure are somewhat more difficult in children than in adults, and the after-treatment usually cannot be so thorough with crying children as with older patients. However, in cases of children in whom the aural disease or its treatment is not modified in any way by the conditions I shall shortly mention, I have found the end-results satisfactory in a high percentage of cases.

2. The condition of the nose, nasopharynx and pharynx: The end-results of surgical measures for the cure of chronic otorrhea are often failures to a great extent if the diseased environment of the ear is not corrected. This fact is now generally accepted, I believe, by aural surgeons, for if, as believed, the nasal and nasopharyngeal diseases were the chief predisposing factor in the causation of the chronic aural affection, then cure of the aural disease must be unlikely so long as the diseased environment remains. Clinical experience in the treatment of chronic running ears bears out entirely the correctness of this belief.

3. The nature and violence of the original aural infection: These probably more than any other factors determine the end-results of surgical treatment. If the bacteria of invasion were violent of action, as is usually the case in the infectious diseases of childhood or in the severe epidemics of grip and as a result serious invasion of the osseous walls of the drum cavity or of the deeper portions of the adjacent mastoid or petrous parts of the temporal bone occurred, the nature of the final outcome may be in doubt; however, the end-result of surgical treatment will even then usually be a cure, but may possibly be only a partial cure and sometimes is a failure. While of course the proportion of cures, partial cures and failures depends much on the conditions present in the patient, as set forth in the points of argument to follow, much depends on the skill of the surgeon at the time of the operation, and on his energy in following the case personally a sufficiently long time afterward.

4. The presence of complications at the time surgical measures are attempted: The end-results of surgical treatment of chronic aural affections, when complicated by extension of the infective processes to the labyrinth, meninges or lateral sinus, furnish a brilliant example of the progress and efficiency of aural surgery. The end-result, of course, here depends very much on early diagnosis, since success in this class of surgery goes hand in hand with prompt diagnosis, which alone gives the surgeon his essential opportunity. Increased knowledge on the part of the internist concerning the possibilities that may arise from a chronic aural discharge and the greatly increased facilities to early diagnosis of aural complications now at hand, when taken together with a better surgical knowledge on the part of the aurist than ever before existed, furnish the reason for the many brilliant cures that have been reported as a result of surgical measures for the relief

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of brain abscess and sinus thrombosis. About 50 per cent. of these patients are now cured, whereas formerly 1 per cent. was regarded high. The present percentage of cure will no doubt be raised when internists and others have greater solicitude for those patients who have chronic aural discharge. Earlier diagnosis in a larger percentage of cases will then be made, and of course earlier operative opportunities will be presented.

The weakest spot in surgical otology today is the end-result of meningitis, especially leptomeningitis, as a complication of suppurative otitis media, since practically all patients now die, whether operated on or not. Some encouragement has been offered from operative methods and subdural drainage, especially by Crockett, who recently reported three cases of cure from this plan; but the majority of operators have not reported anything but failure. The chief end-result at present, in so far as concerns meningitis, is prevention, and there can be no doubt but that all who operate for chronic suppurative otitis media according to the most approved technic frequently prevent this dangerous intracranial complication; hence it is evident that the end-results from treatment, especially the curative end-results, often depend on:

5. The period of the disease in which the operative attempt to cure is made: Largely, no doubt due to the facts that a chronic aural discharge is not often painful, and to the tradition that it may be helpful to the system, operative measures are not considered by the patient until danger signals have arisen which are clearly evident to the experienced aurist. The nature of the end-results are often reversed by the delay, for results prove that radical mastoid surgery performed for the cure of a running ear, if done at a selected time, and before there is present any extension to some vital center, is among the safest surgical procedures, and also that when performed by those especially trained and experienced in this class of surgery; the cure of this discharge should be expected in the vast majority of such cases. The end-results at present are, therefore, not so good as they should be. The fault lies with both the physician and patient. The physician who should know the dangers resulting from delay should reeducate the public concerning the actual dangers due to prolonged aural suppuration. Considerable knowledge about discharging ears existed centuries before disease of the appendix was known, yet today both physician and laity know vastly more of the diseases and dangers lurking about the appendix than about the equally common and equally dangerous chronic suppuration of the middle ear. The only conclusion one can draw is that the abdominal surgeon has gone to greater pains to enlighten the public than has the otologist.

6. The physical condition of the patient: No argument is needed to prove that the end-result from the surgical treatment of chronic otorrhea depends much on the physical condition of the patient. Conditions of ill health may be due to bad environment, overwork, undernourishment, chronic malaria, septic states due to the ear itself, or other foci of infection. Most of these and others can usually be sufficiently overcome, in preliminary treatment, to insure a satisfactory end-result. Likewise, when syphilitic, the condition of the patient may be so cleared that satisfactory aural treatment may be instituted. Unfortunately, however, tuberculosis, either general or local, is often present in these cases, and the outcome usually is failure to cure.

7. The skill and judgment of the operator: While of course these attributes are necessary to the success of any class of surgery, they are especially essential in the performance of the bone surgery necessary to the cure of necrosing osseous tissue which lies in the midst of important and somewhat dangerous structures, the semicircular canals, facial nerve, lateral sinus and brain coverings. Overoperating incurs great risk of injury to one or more of these structures, while timidity on the part of the surgeon is pretty certain to result in failure to cure, because of failure to remove all the disease.

The nature of the end-result, whether cure or failure, frequently depends on the efficiency of the after-treatment of the patient following surgical means of cure. The most satisfactory end-results are secured when the surgeon who operates gives personal attention to the after-care until the wound is dermatized, and healing is assured. Failure is a not infrequent termination in patients, even though thoroughly well operated on, if afterward they are assigned to the care of physicians not especially trained in the management of this class of surgery. I have the personal feeling that my work is only well begun when a radical mastoid operation is performed and that it is quite as much a duty to note the entire after-progress as to operate.

The nature of the end-result often depends much on the patient himself, for sometimes as soon as he is able to leave the hospital, and when the external wound is healed, he acts on the belief that all has been done in the way of treatment that should be done, and therefore neglects to return for further observation or necessary care. I have seen many examples of total failure due to such neglect following the most skilful operations. On the other hand, I have observed many successful endings in cases that, during the first few weeks or even months following operative measures, were most unpromising, the final cure being obtained, I believe, by persistent, well-directed after-attention. While the foregoing points determine in large measure the end-results of treatment, the results themselves may be considered.

As to the effect on the hearing: This, in the bona fide nonsurgical cases in which there is no labyrinthic involvement, is usually favorable, since there is frequently much improvement in function and seldom actual loss above that already present. Following surgical treatment, especially following the radical mastoid operation, there has been, in my experience, usually a retention of the same degree of hearing as before the operation. Occasionally I have observed some loss of function, and I think quite as often there has been slight gain. Great improvement of function should not be expected as an end-result of surgical treatment. The prime object of such treatment is to conserve life, and improvement of hearing should usually not be promised. I am aware that a few American aurists make claim of almost invariable marked functional improvement following their own technic of operation, but I believe this claim is not made by the majority of aural surgeons.

As to cure of the suppuration: In strictly nonsurgical cases ultimate cure may be expected. In patients operated on in a more or less radical way ultimate cessation of the discharge and dermatization of the operation wound will follow in 90 per cent. of cases, provided the hospital facilities are modern in every respect, the surgeon is well experienced, and the

after-care of the wound is given by one skilled in the healing of this class of wounds. This estimate is, of course, exclusive of tuberculous cases.

As to the mortality of the patient: Nonsurgical aural discharge, while it remains nonsurgical in its nature, probably never ends disastrously to the patient. When bone necrosis occurs, and when the case is therefore a surgical one, danger to the life of the patient is present in each case and at all periods of the progress of the disease. Proper surgical treatment does not add to that danger, but on the contrary is the best-known means of avoiding a fatal result. Radical surgery of the temporal bone, performed for the purpose of curing chronic aural discharge, is of itself remarkably free from danger to life. In a record of about 300 radical mastoid operations I do not recall death in a single instance that could be attributed to the operation. The real danger to life arises in neglected cases of chronic aural discharge, when the disease has already approached or actually attacked some vital spot. The radical mastoid operation may therefore be regarded as especially free from danger to life in all cases in which it is employed before the meninges or sigmoid sinus has been attacked by the aural suppuration.

Any discussion of the end-results of treatment of chronic aural suppuration would not be complete without mention of the fact that rarely the dura is uncovered accidentally during operative procedures, the sinus may be lacerated and the facial nerve may be exposed or severed. Accidental exposure of the dura or penetration of the sigmoid sinus are of little or no consequence if the wound is left clean and the accidental injuries are properly dressed and managed. Injury to the facial nerve is of course a serious accident, and one much regretted, but it should always be remembered that Nature, through the necrosing processes incident to the chronic otorrhea, produces many more facial palsies than does the experienced, careful surgeon-otologist.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MACKENZIE, PIERCE AND BARNHILL

DR. FRANCIS P. EMERSON, Boston: Whether we have a chronic suppurative middle ear or an acute suppurative middle ear, the first essential is drainage through the membrani tympani, drainage which implies a sufficient opening, with the removal of granulations or anything that blocks the free flow of pus. After that has been established certain primary conditions of the eustachian tube, dwelt on by Drs. Pierce and Mackenzie, will have to be considered. They are fundamental. In a rational consideration of this subject we must have in mind some conception of the way in which this infection becomes chronic, and the methods which would be employed to clear it up. One of the very early conditions is that connected with imperfect ventilation of the nasal pharynx, which is caused by the septum. With a badly deflected septum there is either a compensatory hypertrophy of the middle or inferior turbinal. This is followed by an increased function and hypertrophy. The hypertrophy causes imperfect ventilation and imperfect drainage. This latter is followed by a low grade infection which is constant and persistent and a source of reinfection of the eustachian tube. A little later comes a more virulent infection, and this is followed by sinusitis. Any preventive measure must take into consideration all of these factors—ventilation, drainage, reinfection. In certain cases of mastoiditis in children it is impossible to heal that mastoid until we remove the adenoids. The primary cause of this middle ear trouble was an acute infection in the nasopharynx, and because the connection is not more evident when these cases come to us as chronic cases does not imply that the primary focus is not still active. Any conservative treatment must take into consideration the remedying of these conditions which cause reinfection. These infections that have their focus in the sinuses extend to the epipharynx, to the eustachian tube, and later to the middle ear, so that a conservative treatment of the middle ear suppuration implies straightening of the septum and trimming the turbinals. You must also cure the epipharyngitis, which is often a very active cause in keeping up an irritation in the tube.

Another point is that the eustachian tube on the side of the middle ear which is most involved is always the one most open. If you catheterize the eustachian tube you will find that to a certain extent it has lost its power of contraction and that the condition is often made worse by autoinflation by the patients themselves.

After you have relieved the primary foci and the resulting infection, and established drainage of the middle ear, many patients will get well without further treatment. All the other measures that are applied directly to the middle ear come in as a part of the secondary treatment.

DR. W. EUGENE DIXON, Oklahoma City: I was very much interested in Dr. Pierce's remarks on otitis media, especially on the tubal treatment, but I wonder how many here find difficulty in using the No. 1 wire with cotton on the end passed through the catheter as a guide into the eustachian tube. I cannot get through the isthmus of the tube as easily as the doctor says he can. I want to present a technic for passing cotton wound applicators, bougies, electrodes or syringes into the eustachian tube by the direct method without using the catheter as a guide. Wind the cotton very thinly, but securely, around the applicator from the tip to one-half inch above the bend. Dip it into cocain, to cocainize the mucous membrane. Into one nostril pass the Holmes nasopharyngoscope. Adjust it so that the upper one half of the mouth of the tube is in plain view. Into the other nostril pass the cotton wound applicator in such a way that the tip of the applicator is on the floor of the nose. Looking into the scope you can see it as it emerges into the nasopharynx. Carry it outward, and backward into the mouth of the tube in a vertical direction, and remembering the anatomy, place the tip on or near the floor of the tube, rotate the applicator or syringe tip outward, upward and backward, all the time keeping the instrument after its rotation in the upper part of the tube, or between the anterior and posterior plates of the upper portion. It is very easily done.

DR. CULLEN F. WELTY, San Francisco: Dr. Pierce said that chronic suppuration of the middle ear is easily treated and that a cure results in a majority of cases—if the proper treatment is given. This is a most remarkable statement coming from a man so prominent. I have tried for weeks and months to do the various procedures that have been described, with little or no results. Patients come back in two or three weeks or months with a discharge from the ear again. The number of patients cured by treatment as compared with the number cured by operative procedures, is almost infinitesimal. Dr. Pierce also says that he cures cholesteatoma by irrigating the middle ear, which is absolutely ridiculous. It cannot be done, as he well knows.

He also says that if there is mastoid involvement, these patients are not so likely to get well. How do you know whether there is mastoid involvement? He says: If there has been pain or tenderness back of the ear. I challenge anybody who makes such a statement as that. People may know whether they have had pain or tenderness back of the ear, but you cannot say there is mastoid involvement because of any such symptoms, as the pain and tenderness may be produced by tooth root abscess—imbedded teeth or a buried tonsil. I have had to contend with all these and many more. I wish to say furthermore, that in the radical mastoid operation a large percentage—90 per cent.—of the cases have large lesions within the mastoid cells, lesions that could be seen at from 10 to 15 feet. If we are confronted with such statements as Dr. Pierce has made, somebody must have the courage of his convictions and get up and explain why this is not just as stated. Dr. Pierce speaks of tuberculosis—that these patients do not get well, so what is the use of oper-

ating? The only treatment for a tuberculous ear is to operate thoroughly, and if you operate thoroughly you will cure them. I have such cases on record.

DR. EMMETT L. JONES, Cumberland, Md.: For many years I have treated my patients by a simple method which I described two years ago. I believe all ear infections originate in or travel through the rhinopharynx, and if we are to treat them successfully we must begin with the rhinopharynx. If we do that we will have nearly 100 cures in 100 cases. With this method the hearing is always restored, the perforations heal, the discharge ceases, and there are no mastoid symptoms. Patients who have had for several days purulent mastoid symptoms according to all accepted standards, following this treatment get well, and even some chronic cases are cured. The basis of the treatment is the daily application to the rhinopharynx of a strong solution of phenol (carbolic acid), tincture of iodin and glycerin, from which you have the reaction of a bad sore throat. Then in acute cases I dip the tip of a tampon in a solution of epinephrin in anilin, 1:1,000, with 10 per cent. of cocain added, and apply that frequently to the drum membrane. In a few hours the pain eases, the discharge soon amounts to nothing, and the trouble in the mastoid gets well, and there is absolute restoration of hearing.

DR. J. HOLINGER, Chicago: The main part of Dr. Beck's paper is his pathology. Pathology of chronic suppuration of the middle-ear has not been given, and therefore we will not and cannot come to an agreement on how to treat it. If we have a carefully worked out pathology, the indications will become evident, and then we might agree; but this way we cannot.

DR. A. E. PRINCE, Springfield, Ill.: I want to direct attention to a simple method of securing a partial vacuum in cases of incipient mastoiditis. Every acute inflammation of the middle-ear should be considered in its relation to the antrum and mastoid cells which are usually involved. The establishment of a partial vacuum in a large percentage of acute cases, and in some subsequent cases, will prevent the extension of the disease and bring about a cure. Dr. Baum carried through a series of cases which were recommended for mastoid operation, by the use of Bier's vacuum method, and cured 80 per cent. without an operation. The method I recommend is much simpler. It consists of instructing a mother or nurse to use the flaring end of a soft catheter which is selected to fit the external meatus. By sucking with the mouth at frequent intervals the patient is relieved, and the disease is prevented from extending to the deeper cells; an operation is avoided in a considerable number of cases. If the patient be mature he can do this himself. He will know when it hurts and avoid excessive suction. This is applicable after every paracentesis and every spontaneous rupture of the drum membrane. It does not apply to cases of chronic suppuration, but to recent cases.

DR. OLIVER TYDINGS, Chicago: The causes which brought into existence suppurative otitis media, if left uncorrected, are sufficient to keep it going to the end of time. I wish to endorse the tube introduced by Dr. Prince. I have used that treatment for a number of years. It was not original with me; I do not know where it came from. I am sorry to disagree with Dr. Pierce on cholesteatoma. I believe that cholesteatoma has a separate and distinct etiology—and this in spite of no less an authority than Politzer. My own experience is at variance with his, and proves conclusively to my mind that it is due to a separate and distinct entity from the cause of suppurative otitis media, and must be treated by separate and distinct methods of treatment. I have used the same catheter Dr. Pierce used; I have washed out the tympanic cavity until I was tired and the patient's endurance exhausted—and although I have not reached the degree of efficiency in the use of the catheter that Dr. Pierce has—and while I was doing that work patiently, and sometimes had an erosion of the semicircular canal with the resulting disturbance of equilibrium, showing that with all my washing, I still got enough accumulation there to appall me, so I quit washing out and I have not washed an ear for this malady for some time. The only thing I do or advise for cholesteatoma is to operate, and the sooner done the better. In regard to vaccines: I have found them useful in some cases and have gotten some very beautiful results with the mixed vaccine.

DR. HARRY B. HARRIS, Dayton, Ohio: It strikes me that Dr. Dixon's applicators are too stiff to pass through the eustachian tube without doing injury. The applicators I am using and have used in several hundreds of cases are those of Dr. Yankauer. I do not recall any case in which I was unable to pass the applicator through the isthmus and make my application as desired. These applicators are made of very delicate wire, bent back and twisted on itself which makes it double, leaving a very small loop at the end where the cotton is applied. It is impossible for the cotton to come off of this end if properly put on, and the applicators are so flexible that they easily mold themselves to the shape of the tube without undue force.

DR. W. EUGENE DIXON, Oklahoma City: I have been using these applicators since 1910, and never once in that length of time has the cotton come off. The cotton is wound not only on the end, but clear back of the bend and therefore it is always in sight. If it did come off all you would have to do would be to pull it out with a pair of forceps through the nose, as the bend of the instrument which is covered with cotton is not in the eustachian tube and therefore the cotton would be left hanging in the nasopharynx. The new applicators are threaded on the end for some distance which holds the cotton very securely, in fact so secure that it is very difficult to remove it after the use of the applicator. As far as injuring the tube is concerned, the cotton wound applicator can be passed just as gently as a catheter can be passed into the urethra. It is held in one hand and passed while with the other you hold the nasopharyngoscope, and see just what you are doing in every step of the operation. The sense of touch is acute and one can very readily develop a technic without doing harm.

DR. WILLIAM S. TOMLIN, Indianapolis: As to tuberculosis of the middle ear, having had some experience as consultant in the treatment of tuberculosis for a sanatorium, a considerable number of patients have come under my care. Of most importance in their treatment is the local application of tuberculin emulsion. We start usually with the dilution No. 1 or No. 2, and gradually increase it. Our experience has been very favorable in the local treatment of these cases where the opening into the drum was sufficiently large to make a successful application. In some cases I have tried to introduce it through the eustachian tube, but that has not been successful when the opening into the drum was not large. These cases require especial attention when tuberculosis develops in the throat. Tubercular infection of the middle ear may be said to be almost always derived by way of the eustachian tube. I am also of the opinion that the primary causes which have influenced the development of infection of the middle ear must be removed if we expect them to recover with nonoperative treatment, and in many cases even with operative treatment the ear will continue moist, giving rise to recurrences, if you do not remove the cause. In some cases in which I have not been able to find adenoids, teeth, infected tonsils or indications of the source of infection, the treatment of the lower end of the eustachian tube has brought about results. In these cases I have found the patients would state that they had noticed when attempting to blow the nose in the ordinary way, without any extraordinary force, they would constantly hear the blowing of the air into the middle ear.

DR. CHARLES M. ROBERTSON, Chicago: I have been waiting to hear some one raise the point of diagnosis of perforation of the tympanic membrane. In chronic suppuration of the middle ear if the discharge consists of mucus from the eustachian tube, there is no use putting on suction; there is no use putting medicine in the ear, there is no use in lavage. If the patient wishes to clear the tube he can do it by blowing the air through from the pharynx. In case of suppurative disease of the ear per se, if the discharge is coming down from the attic, there is no use to wash by cannula as the case requires operative treatment. In regard to perforations, we

divide them into innocent and dangerous. If it is a dangerous perforation there is no use in trying anything else but an operation. When the opening in the drum membrane is large anteriorly and of innocent type the case is usually tubal and the tube should be destroyed. With the perforation in Shrapnell's membrane, there is no use to expect results by topical treatment; the opening should be enlarged to promote drainage and if this is not sufficient to produce cessation of discharge the patient should be operated on by a complete exenteration. I use the gauze treatment in the last part of a suppurative discharge in acute cases and it has done very well in suppurations of this type. In all of these chronic cases a radical mastoid operation should be performed.

DR. CLARK W. HAWLEY, Chicago: I do not know how to treat suppurating ears. This man says do this, and that one says do that. I say it depends on the symptoms in each case. In acute suppurating ears do not use water. I use absolutely no water; I have not washed a suppurating ear for twenty years. I simply put a piece of cotton on a small toothpick and pass that into the ear until I get it clean.

DR. GEORGE W. MACKENZIE, Philadelphia: We should anticipate complications before they arise. In the first place, any acute middle ear suppuration which endures for more than six weeks is complicated. There is something that is delaying recovery, and it is for us with what knowledge we possess of the pathology of middle ear suppuration to determine what is at fault and whether there is a single factor or multiple factors. By a thorough examination one is often made aware of complications before the patient complains of symptoms suggesting them. Nine or ten years ago I examined a series of 117 cases of cholesteatoma. They were examined before operation and a diagnosis of cholesteatoma was made in every case by a microscopic examination of the washings from the ears. The results of these examinations were published. The secretion of little flaky particles that come out of the ear when washed is put under the microscope in its natural state and examined for micro-organisms and crystals. The crystals are rhomboidal in shape, many with a corner broken off. When cholesterin crystals are found, the patient has a cholesteatoma. In 117 cases in which radical operation was performed, the diagnosis made by the microscope prior to operation was substantiated. Furthermore, there was not a single case of cholesteatoma that had not one or more complications, which, I think, is the strongest argument in favor of operating in all cases of cholesteatoma. We run too much risk by trusting to conservative methods.

DR. NORVAL H. PIERCE, Chicago: My brief remarks were for the purpose of calling attention to my views regarding chronic suppurative otitis media, and I endeavored to show that chronic suppurative otitis media is not a simple matter. It is not an entity. A discharge from the ear is only a symptom of a very complicated pathology involving a very complicated organ. I think I do as many radical mastoid operations as any gentleman present. I do not hesitate to do a radical mastoid operation. But I think that the man who on seeing a chronic discharge from the ear says that the only possible treatment for it is a radical mastoid operation is devoid of proper education or is a fanatic. I regard cholesteatoma as it involves the ear as a very dangerous condition, one that most frequently calls for proper radical treatment. I have cured cholesteatomatous conditions of the middle ear by other means than the radical operation, and have retained for the patient a sound conducting apparatus that has a very much better function than the sound conducting apparatus of a patient who has been operated by the radical method after four or five years. I am not disparaging radical work. I am hoping that you will not regard the suppurative ear as an indication, and unequivocal indication, for radical work. Dr. Dixon drew attention to his applicators for the eustachian tube. The eustachian tube is not a straight tube; it is a tube that has more or less of an angle at the isthmus, and I cannot see how he can drive that straight inflexible staff up a tube that has an acute angle. That is the reason I use a very flexible silver applicator. There are tubes through which we cannot push even this very flexible applicator because of the acuteness of the tubal angle. Regarding the strictures of the tube, Schwartzen a very long time ago investigated on the dead body the frequency with which organic strictures of the tube occur, and his report was to the effect that in simple inflammatory conditions, strictures of the tube practically never occurred. They occur as the result of diphtheria, syphilis, and some other diseases, but then the strictures are situated at the pharyngeal end of the tube, and according to his report there was never a stricture at the isthmus. The reason men think the tube is very frequently the site of stricture is because the probe, or bougie, or applicator is arrested at the acute angle. I am sorry to think that any gentleman in this section would criticize a remark that I might make here as absurd and ridiculous. I have given this question of otology the best part of my life. I have tried to analyze cases, having ample opportunity and material to reach certain conclusions, and I say now, that if we do not treat these chronic suppurative inflammations in an intelligent manner, if we resort immediately to the destructive—because it is destructive—radical procedure; if we do not attempt to bring about a cure in these cases that present no symptoms of rapid advancement, of cerebral or other complications, then we are not doing our duty to our patients and are undoubtedly rendering ourselves liable to the very ignominious appellation of plain, ordinary, common or garden variety of butcher.

DR. JOHN F. BARNHILL, Indianapolis: Some remarks were made that it seems to me ought to be corrected. The question is the problem we must meet in the chronic discharging ear. Each patient is a problem. If the problem is a simple one, if, as Dr. Pierce has said, the whole trouble is in the eustachian tube, clearly the problem is one of the eustachian tube and not of a mastoid operation. If the trouble is in the environment of the ear, if there is a bad state of ventilation, if it is the epipharynx that is involved, then the problem should be attacked from that angle. One gentleman says 100 per cent. of his patients were cured by his treatment of the epipharynx. I believe these were acute cases and therefore do not fall within the line of our discussion. I think every one recognizes the value, ordinarily, of treatment of the epipharynx, but to allow a statement such as Dr. Jones made, that 100 per cent. of patients were cured by this treatment, to go unchallenged, would be wrong. Now I think we have seen cases in which we have not had any time to make any application to the nasopharynx. There is often a mastoiditis almost as soon as there is a middle-ear disease, and it does not stand to reason that we could cure that kind of mastoiditis by local application to the nasopharynx. If there is necrosed bone, and if reasonable local treatment has been given, I think Dr. Pierce will agree with me that if the suppuration continues some kind of surgery is necessary, and that radical mastoid surgery is best. If there is cholesteatoma present, I think that not 95 per cent. but 99 per cent. of these cases are cases for the radical mastoid operation. So many of them are complicated. Suppuration from the ear means that something is rotting. Pus is the product of decay, and if something is decaying and the decay continues long enough it will get into the meninges, the sinuses and the labyrinth, or some other dangerous place. It is not wise to stand by indefinitely and allow a chronic suppuration to go on without warning our patients that an operation, after reasonable treatment, is the best and safest procedure.

DR. J. HOLINGER, Chicago: I should like to caution against the use of anilin. I have seen serious symptoms of poisoning develop after a few drops of the oil were poured in the ear. It was a case of acute otitis media without perforation, and while it was not fatal, it kept me in hot water for a whole night. I never shall use anilin in the ear under any condition.

The Anesthetist.—The surgeon is greatly dependent on the anesthetist. The risks of anesthesia should not be disregarded, and will not be underestimated by any one who has encountered fatal idiosyncrasies in patients. In a difficult case the skill of the anesthetist may be of no less importance than that of the surgeon himself.—S. S. Goldwater, M.D., *Modern Hospital*, November, 1916.

WOUNDS IN WAR AND METHODS OF TREATMENT

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Before the wounds produced by modern military projectiles as seen in the present war are described, and before the methods which have been found most efficient in dealing with them are discussed, a brief consideration of how these injuries are inflicted and especially of the conditions under which they are received may not be out of place, because those conditions have an important bearing on the character of the wounds and on their treatment. As Surgeon-General Sir Anthony Bowlby[1] has stated, "one of the most important points for present consideration in connection with the wounds of war is the geographical situation of the battlefield."

During the first five or six weeks of the war the fighting was in the open, but, since the battle of the Marne, with a few exceptions the contending forces have lived and fought in trenches. The territory in which the fighting has been done is, or was before the war, a thickly populated and intensively cultivated region. The soil, on the whole, is a rich loam, and for generations it has been heavily manured. It produces abundant crops, and provides sustenance for large numbers of cattle. Then, too, the climate is moist. During the winter months, from late October until early April, it rains on about five out of seven days, and during the summer months there are many cloudy days. Such conditions, as one might expect, are ideal for bacterial growth, and this soil teems with micro-organisms of every kind, including large numbers of spore-forming pathogenic anaerobes.

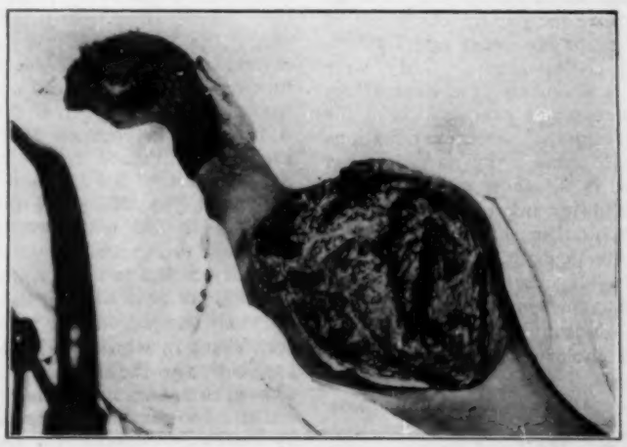

Fig. 1.—High explosive shell wound of right shoulder with destruction of deltoid and shattering of upper third of right humerus. (Photograph by King—American Ambulance.)

The trenches are deep, and for long periods the soldiers have to stand or move about in mud and water to their ankles or even to their knees. They have to sleep as best they can on the floor of the trench, on dirt shelves dug out of the trench, or in one of the scattered shelters made of rough timber, so that they are covered with dirt and mud from head to foot, especially during the winter.

If a man in the trenches is hit and falls, he has to lie in the dirt, mud or water until assisted by comrades. Every soldier is provided with an individual dressing which is immediately applied by himself, by a comrade or by stretcher bearers as dirty as himself. One can imagine what such a dressing is. If he is able to walk, he goes by a narrow communicating trench to the nearest *poste de secours* or dressing station located in an underground shelter or cellar, protected against shell fire, from several hundred feet to several hundred yards back. If unable to walk, he must be carried; but the trenches are narrow and crooked, and render the use of an ordinary stretcher out of the question. To overcome this difficulty, both French and English have devised an ingenious trench stretcher. If a heavy bombardment or an attack is in progress, the wounded often have to lie for hours where they have dropped, until they can with some degree of safety either walk back to the dressing station or be picked up and carried by stretcher bearers. During an attack on the enemy trenches it often happens that a wounded man has to lie in the open between the opposing trenches until nightfall affords him sufficient protection to crawl back to his own trenches, or permits a relief party to bring him in.

In a large percentage of cases there is a considerable interval between the injury and the first dressing at the dressing station. During the first month of the war many men remained on the field for a number of days before being picked up, and the results of such prolonged exposure to every factor favorable to infection would be impossible to describe. The sudden necessity of defending their territory made it necessary for the French to utilize every means of transport to push their troops to meet the rapidly advancing enemy and to keep these troops supplied with food and ammunition. Force of strenuous circumstances made the care of the wounded a secondary consideration. During the first month of the war large numbers of French wounded fell into the hands of the Germans. At the battle of the Marne, thousands of French wounded, after remaining on the field for several days in many cases, had to spend several hours more baking in freight or even open flat cars under a hot August sun on some railroad siding, their wounds in the meantime "stewing in their own juices," while trainload on trainload of troops was being sent forward to pursue the fleeing Teutons. By October, 1914, however, this state of affairs had considerably improved, and has been steadily improving ever since, until now the wounded are evacuated and cared for as quickly and as efficiently as can possibly be done with due consideration to the character of the fighting and the difficulties it presents. And these difficulties are great.

During the open fighting which characterized the first weeks of the war, the French armies, obliged to retreat before the vastly superior numbers of the Germans, could not establish any but temporary field hospitals. The best which could be done at that time was to put the wounded on cars and send them back to base hospitals in Paris and the provinces to the south. But after the battle of the Marne had forced the Germans to "dig themselves in" and the Allies to imitate them, it became possible to establish at short distances behind

1. Bowlby, Anthony: Bradshaw Lecture on Wounds in War, Brit. Jour. Surg., 1916, 3, 451.

the lines temporary field ambulances,[2] which were gradually organized so that urgent operations could be done. We must remember that all these dressing stations and field ambulances are within artillery range. Sometimes field ambulances are located in buildings partly demolished by previous bombardments; sometimes in a cellar; others again are located, as in the Vosges and Argonne districts, in underground chambers dug out of the side of a hill and carefully concealed and protected against shell fire. The equipment of these ambulances depends to a large extent on the resourcefulness and ingenuity of the surgeon in charge. In spite of tremendous difficulties, however, many of these field hospitals are equipped with every essential to the performance of all kinds of major surgery.

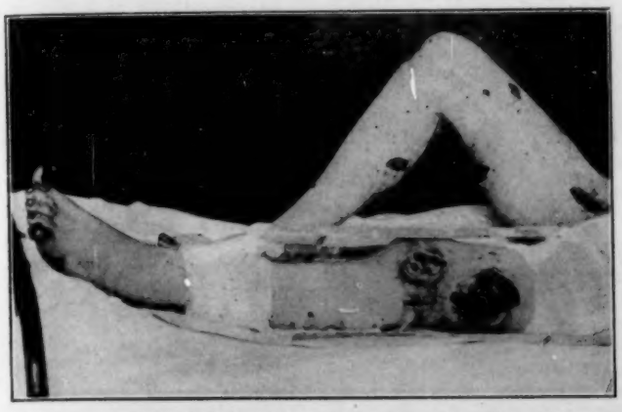

Fig. 2.—Multiple shell wounds of both lower extremities with purulent arthritis of left knee. Photograph taken on admission. Bridge plaster cast applied at evacuation hospital. (Courtesy of the American Ambulance.)

To give an idea of the difficulties with which they have to contend, a French surgeon in charge of a field hospital of 2,000 beds behind the Somme front told me not long ago that, in one period of thirty-six hours, 600 wounded had passed through his own hands. He had worked out a new splint for fractures of the femur, but with such a rush of the work he had been able to apply it in only a few cases and had not been able to follow its results, because the wounded had to be evacuated immediately to make room for fresh arrivals. This impossibility of following cases and seeing the final results of their work is one of the most serious handicaps of field ambulance surgeons. But war is war, and a field hospital must always be ready to receive and quickly care for the newly wounded and keep itself cleared by evacuating them as soon as possible to the base hospitals by way of the intermediate evacuation hospitals. This will explain why it is that the best ground on which to study the wounds of the war and the different infections and complications which so frequently accompany them is the base hospital, because here cases can be followed, and the results of any line of treatment can be controlled by daily observation. Another surgeon, working behind the Verdun front, told me that in one week he and his associate had performed 400 operations in an underground ambulance and under shell fire much of the time. Under such circumstances errors of judgment are to be expected, and technic must be boiled down to the bare essentials.

At the dressing station the wounds are given their first real dressing by a surgeon, who may have had antebellum surgical experience, or who, previous to the war, may have been a general practitioner or a recent hospital intern. No operations are performed at the dressing stations. The wounds are examined, quickly dressed with a view, both to the cleanliness of the wound and to the comfort of the patient, and the men sent back, on foot if they can walk, or on a stretcher suspended from a two-wheeled cart pushed or pulled by two men, or sometimes in a horse-drawn ambulance, to the nearest field hospital. Here they are given one or more doses of tetanus antitoxin, their wounds are explored and drained, accessible foreign bodies are removed, fractures are temporarily splinted, and all patients in condition to be transported are then sent by motor ambulances to the nearest evacuation hospital. In very serious cases the patients may be kept at the field hospital until their condition warrants transportation. At the evacuation hospital, for instance at Bar le Duc or at Révigny for the Verdun front, or at Amiens for the French part of the Somme front, they may be kept for a few hours to several weeks, depending on their condition, the intensity of the fighting going on at that portion of the front, and the numbers of wounded requiring attention. Here wounds are more thoroughly drained; fractures are put into more permanent splints for treatment or for transportation, and the men are then sent on by train to the base hospitals in Paris or in other provincial cities. By the time they reach the base hospital, therefore, they have as a rule had more or less treatment, although during periods of heavy fighting it occasionally happens that some men reach the base twenty-four, thirty-six or forty-eight hours from the time they have been wounded, and with the original dressing applied at the dressing station still undisturbed. The average time between the wound and the arrival at the base hospital is about two weeks.

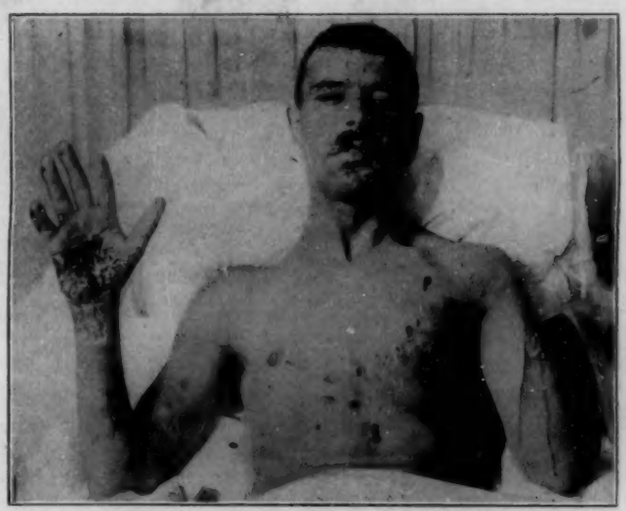

Fig. 3.—Multiple bomb wounds of face, chest and both upper extremities. (Courtesy of the American Ambulance.)

PROJECTILES AND WOUNDS

It is impossible at this time to estimate the proportion of wounds caused by bullet, shell, shrapnel, bayonet, bomb or grenade. During the first weeks of open fighting leading to and including the battle of the Marne, the number of bullet wounds was relatively high. Since that time, however, a large proportion of the wounds have been caused by shell, shrapnel, bomb or grenade. Bayonet wounds are rarely seen except

2. "Ambulance" is a name given in France to a temporary military hospital to distinguish it from a permanent military hospital.

in the immediate zone of fighting, because such injuries, being inflicted at close quarters, the long blade generally penetrating the abdomen or the chest, usually mean instant or early death. Men so wounded seldom live to reach a base hospital.

The construction and ballistics of the different types of projectiles have been amply described and explained by others. I shall limit myself, therefore, to those features which are peculiar to this war.

The effect of the pointed rifle bullet depends largely on the distance from which it has been fired. The proximity of the opposing trenches accounts for the frequency of the explosive effects observed in many cases. During the early stage of the war such results led to charges that the Germans were using dumdum bullets. There may have been isolated instances in which a soldier turned the bullet rear end forward in order to inflict more damage, but this is not at all necessary to explain the explosive effects, which Reverdin of Geneva has found to be due to the violent impact of the bullet on a fluid-containing object or tissue.

The impact of one of these bullets on a large bone, especially at short range, causes extensive shattering, and the fragments are driven with great force into or through the surrounding soft parts, with resulting wide rents of skin and fascia and extrusion of muscle. Rarely one encounters a clean perforation of a bone without fracture or with only a fissured fracture. Almost invariably, however, bullet fractures are badly comminuted.

Fig. 4.—Perforating shell wound of upper left arm with compound, comminuted, and badly infected fracture of left humerus. (Photograph by King—American Ambulance.)

Shells are largely of two kinds, shrapnel or high explosive, and on account of the greater effectiveness and destructive power of the latter, more and more of this type are being used. The effective range of the shrapnel shell is not very great, because the balls rapidly lose their initial velocity. The wounds they produce are not as bad as the worst of those inflicted by the ordinary rifle or machine gun bullet; but, being easily deformed, in some cases they are responsible for considerable damage. On the whole, however, their destructive power is not very great.

Of all the projectiles, none produces such frightful or extensive wounds as the high explosive shell, which in bursting projects with intense violence innumerable jagged fragments of every size from that of a grain of sand to pieces as big as one's hand. And the size of the piece may bear no relation whatever to the size of the wound. The sharp, irregular edges tear skin, fascia and muscle, and pulpify nerves and vessels, causing widespread crushing, contusion, extravasation of blood and sloughing of large areas. One of the worst features of such wounds is that these fragments of shell tear off pieces of clothing, which are carried into the deepest portions of the wound, so that it is extremely common, even in superficial wounds, to find their edges and raw surface covered with shreds of clothing. In deep wounds with widespread laceration of tissues, such pieces of clothing, covered as they are with the dirt of months in the trenches, find favorable lodging in recesses filled with extravasated blood, and are responsible for much infection. Even if a soldier is not actually struck by one of these fragments, the force of the explosion as the shell strikes the ground may project stones, sand and mud, and thus produce wounds which may be very serious. I well remember one man who had been wounded at Douamont, near Verdun. His right thigh showed three deep, penetrating wounds which, when incised and explored, were found to contain a small handful of stones. In another man I recall taking out several pieces of wood which had been driven into an ugly wound of the buttock.

The sudden violent explosion of one of these shells, especially those of large caliber, causes such an atmospheric disturbance in its immediate neighborhood as sometimes to produce death without any external wounds. In some of these cases there has been found a rupture of one or both lungs; in others nothing could be found beyond numerous petechial hemorrhages of the brain.

Bombs, grenades and torpedoes are of many kinds. They essentially consist of a container of iron or some other metal filled with a variable charge of high explosive powder, and are particularly vicious because they explode in the trenches, within a confined space, often producing multiple nasty wounds which, like the shell wounds, are always badly infected by the dirt, mud or clothing introduced by the fragments. These fragments are usually small, however, and as they quickly lose their velocity, do not generally produce the extensive ravages encountered in shell wounds.

In all these injuries the effects are not limited to the immediate wound tract, but may be spread over a wide area, and on microscopic examination pathologic tissue changes may be found "at a considerable distance from the site of the obvious injury." [1]

COMPLICATING FACTORS

By far the most serious complicating factor is the general infection of all the wounds. We have already studied the conditions that lead to this infection, which is always of a very mixed character, although in some cases one organism or another may predominate.

Tetanus and gas infection, while still occasionally encountered, are not nearly so prevalent now as they were in the fall of 1914. This dreaded gas infection, so rare in ordinary civil practice, has been and still is one of the problems of the surgery of this war.

GAS INFECTION

The infection is due to the introduction into the tissues of gas-forming anaerobic organisms, chiefly the

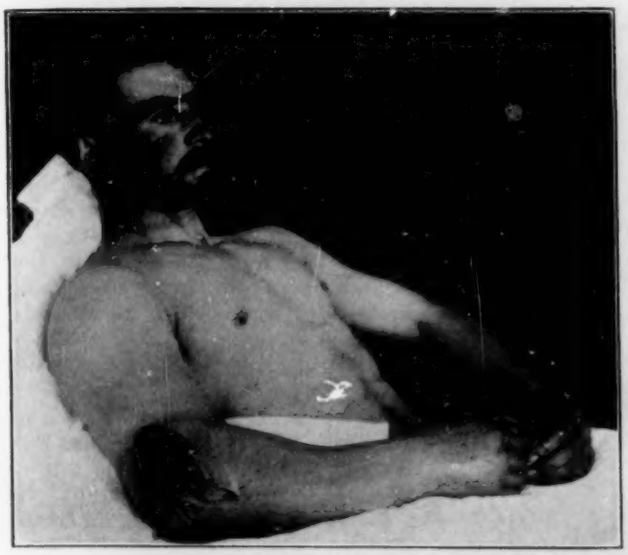

Fig. 5.—Gas infection of right arm with shell wound of lower arm. Note distention of arm and edema of hand. (Courtesy of Dr. Joseph A. Blake.)

Bacillus aerogenes-capsulatus of Welch, known in France as the *Bacillus perfringens*. Cultures made from a long series of wounds at an early stage show its presence, usually in conjunction with pyogenic organisms, in a large proportion. Fortunately, in most of the wounds the tissues are so widely ripped open as not to provide the anaerobic conditions necessary for the growth and activity of the organisms, because in a large percentage of cases they disappear in a short time. In a few cases, however, while the gas formation may be limited to the injured part, the infection may be so intense as to overwhelm the patient in a few hours. The type of wound in which the rapidly spreading form of the infection is generally seen is the deep wound in which the projectile, instead of widely tearing the muscles apart, has split fascia and muscle, and lodged, often after injuring the vessels, in some muscle mass, as in the calf, thigh or arm. The majority of the cases seen were in deep wounds of the thigh.

To give an idea of the appearances and behavior of gas infection, I shall take an actual case and, for the sake of science, allow the condition to follow its natural course:

A French soldier was brought in during the night, let us say, having been wounded in the right thigh four days previously by a piece of shell. He has had only one or possibly two dressings. On entering the ward in the morning and approaching the new patient's bed, one may be struck by an odor which is something between fresh manure and ancient eggs. The temperature may be anything between 99 and 101 or 102, and the pulse from 100 to 120. The patient is restless and complains of considerable pain about his thigh. When the dressing is removed, the first thing to attract one's attention is the distention of the thigh; it may be twice its normal size. Areas of bluish or purplish discoloration and sometimes a number of blebs may be apparent in the region of the wound. On palpation the skin is tense, and on gentle pressure a distinct crepitation may be felt. On examination of the wound, the skin will be found split or torn apart, and a mass of dry, grayish brown muscle protruding. If the dead muscle is spread about the wound tract, or a probe passed into it, a thick, muddy brown pus will exude; and if pressure is made on the tissues about the wound, bubbles will be seen in the discharge or even on the muscle surface. The odor from the wound is quite characteristic. Aside from the restlessness, the patient may not look very ill, and one may be easily deceived. When first seen at 8 o'clock, the crepitation extended up to the groin. At noon the crepitation may have reached the umbilicus. The discoloration has increased. At 3 o'clock the crepitation may extend to the pectoral region. By 9 o'clock the gas has begun to raise the skin of the neck, and the local signs at the thigh have increased. In the wound the protruding muscle is quite dead, dry and brittle, except along the tract of the missile, which is covered with a dirty, muddy brown discharge mixed with bubbles of gas. At midnight the patient is more restless; the temperature may have gone down, but the pulse has begun to flicker. The neck is now well distended and crepitating. At 3 in the morning the eyelids begin to look puffy, and the patient begins to complain of difficulty with his respiration. The gas has invaded the tissues about the throat and, as it increases, the respiration gradually becomes stertorous. The patient, who, until now, has shown a clear mind, begins to wander, and by 9 o'clock he is dead.

This is about the course of rapidly spreading gas infection, but in some cases neither the onset nor the progress of the condition is so rapid. Furthermore, as already stated, only a small proportion of the wounds infected with gas-forming anaerobes follow such a course.

Taylor[3] has shown that the pathology of gas infection consists essentially of a widespread degeneration

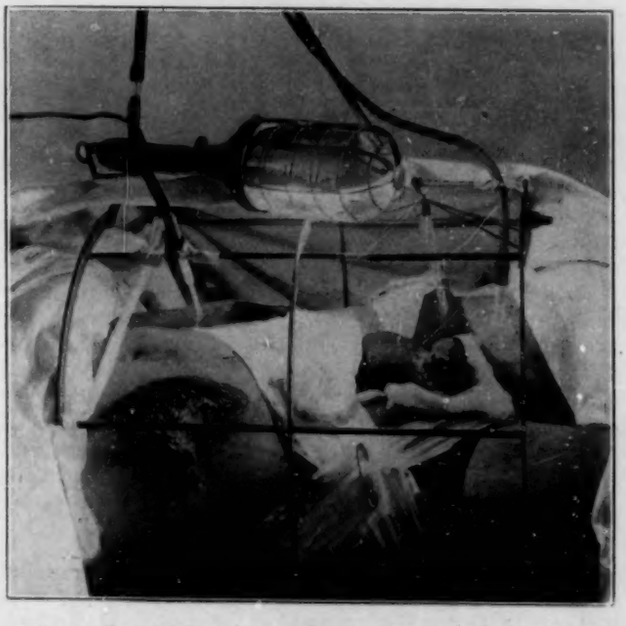

Fig. 6.—Superficial shell wounds of abdomen and scrotum with bilateral testicular hernia, treated with Dakin solution and electric light. Note erosion of skin of right side by solution. (Photograph by the author.)

of the muscle fibers subjected to the increasing pressure of the gas resulting from the activity of the anaerobes, which find an ideal medium in masses of

3. Taylor: Observations on the Pathology and Bacteriology of Gas Gangrene, Jour. Path. and Bacteriol., 1916, **20**; La Ogangrène gazeuse—évolution et traitement, Arch. de méd. et de Pharmacie militaires, 1916.

contused and devitalized muscle, especially when the main blood vessels of the limb have also been involved in the injury. This is followed by rapid systemic intoxication and septicemia.

METHODS OF TREATMENT

In the surgery of civil life an injury is not usually exposed to so many evil influences, and the prompt attention it receives has much to do with the comparatively uneventful recovery of the patient. If a soldier could keep relatively clean, and if, when wounded, he could be immediately taken to a well-equipped hospital and cared for, instead of having to be left lying for hours in dirt and mud with one or more wounds filled with dirty clothing, dead tissue, extravasated blood, and one or more foreign bodies, we might expect a better course and a more rapid recovery, and reconstructive surgical procedures could be employed sooner with shortening of disability.

Much has been written about the treatment of wounds, especially in Europe, since the war has given such an importance to the subject. The first great problem, since it is impossible to prevent the infection of these wounds, has been how to combat this infection. It was early recognized that one important step in the right direction was an early and thorough exploration and cleansing of the wounds. It was for this purpose that both the French and the English took advantage of the comparatively stationary position of their armies to establish immediately behind their lines field hospitals in which the wounds could receive the earliest possible attention. This measure alone has been the means of saving thousands of men. In the cases with abdominal wounds, for instance, it has been shown that the mortality depended absolutely on the time between the reception of the injury and the operation. Unfortunately, the range of usefulness of these field hospitals has necessarily been somewhat restricted by the very conditions under which the work has to be done.

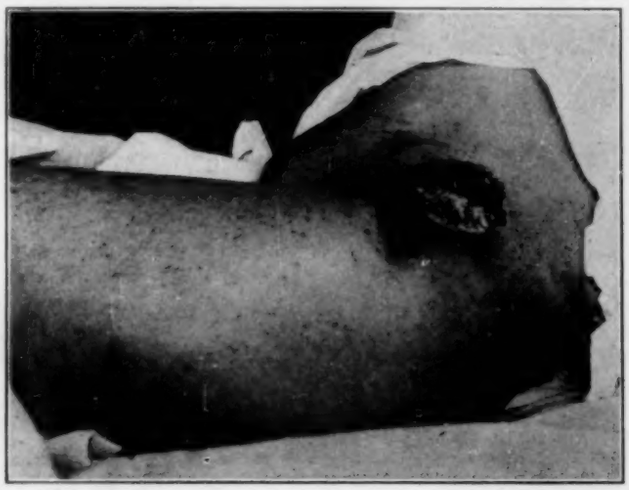

Fig. 7.—Perforating shell wound of left iliac region; no fracture. Simple drainage and wet dressings. (Courtesy of the American Ambulance.)

And now we come to another great problem, and that is the use of antiseptics in an effort to bring about rapid sterilization and healing. If I may again quote Sir Anthony Bowlby:[1]

> It is at this stage that we find two different schools of thought amongst those who are not at the front as to what is best to be done in the treatment of the wound. One school, which draws its experience mainly from the surgery of civil life, would persuade us that all our wounds, if properly treated, should be completely sterilized—at a single dressing if seen early enough—by the application of this or that antiseptic agent; and in any subsequently septic wound can only see evidence that the surgeon's work has not been done as well as it ought. The other school, which draws its limited experience from this present war, asserts that antiseptics are useless as such, and considers that they should not be used at all.

Sir Almroth Wright,[4] contending that the antiseptics in common use have no penetration and, therefore, cannot reach and destroy the organisms in the deeper portions of the wound, strongly advocated the use by continuous irrigation of hypertonic salt solution, which he had found to cause a marked inhibition of bacterial growth, and a rapid autodigestion and removal of sloughs.

Dakin, working with the hypochlorites, announced his results in the form of a new antiseptic for which he claimed that "wounds may be constantly irrigated for many days without producing noticeable irritation, and bacteriological examinations of the wound secretions demonstrate a vigorous antiseptic action. In addition to its antiseptic action the solution exhibits marked capacity for dissolving necrotic tissue." Many surgeons who tried it soon noticed that, though it did burn off sloughs in a short time, it was so irritating when used for continuous drip as to erode the skin where the fluid ran off the wound; and after a few hours the patients howled with the stinging, burning pain, and rebelled against it. It did clean the wounds, however, but their color was that of chemical irritation and not that of healthy granulating tissue. This was the experience of many workers, so that Dakin's solution gradually lost some of its vogue. Later Daufresne claimed to have succeeded in neutralizing the irritating element, and with this improved solution of Daufresne, Carrel has been able to secure a very rapid sterilization of wounds, which are then promptly sewed up.

Dakin subsequently proposed the use of chloramine as a valuable antiseptic. Others advocated hypochlorous acid. Gray, at Rouen, favors the complete excision and immediate suture of the wound. Some of the French surgeons are partisans of Carrel's method; others prefer silver nitrate solutions; still others strongly favor ether dressings, etc.

The results obtained by each worker depend in very large measure on the class of cases to which his particular method is applied. Carrel's hospital, for instance, is located at a short distance back of the lines, so that most of the patients admitted have been wounded only a short time before. The wounds are relatively fresh, and infection has not had time to develop to any great extent. The wounds are immediately enlarged and explored; every recess and cranny is laid open, and all foreign material (projectiles, clothing, etc.) removed. The wound is then filled with very fine catheters running into every corner, and through these little tubes is allowed to flow intermittently Daufresne's solution. There can be no doubt of the efficacy of this method, especially in wounds of the soft parts, such as constitute the majority of the cases received at this particular hospital.

4. Wright, A. E.: Wound Infections and Their Treatment, Lancet, London, Oct. 30, Nov. 6 and 13, 1915.

Let us now go to a base hospital in or near Paris. A large proportion of the wounded arrive from one to three weeks after their injury, having been cared for in the meantime by one or more surgeons in one or more hospitals. They may have bad compound fractures, resected joints, penetrating or perforating wounds of the thorax, skull injuries, etc. Infection has been going on a long time and, while the fundamental principles of treatment are the same, the conditions are not the same, and the treatment must be adapted to the conditions.

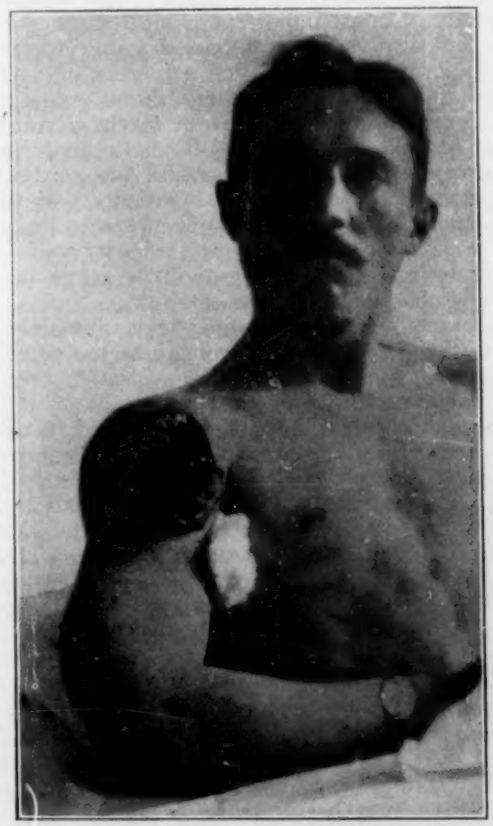

Fig. 8.—Shell wound of right shoulder, showing almost pure culture of B. aerogenes-capsulatus, but no clinical symptoms of gaseous emphysema. Wound healed quickly under wet hypertonic saline dressings. (Photograph by the author.)

The excision of wounds advocated by Gray and others is applicable in only a few cases; in the majority of wounds it is out of the question, especially in old cases with long standing infection in which the elements of infection have become deeply lodged; in such cases attempts at excision and suture often lead to reinfection and breaking down of the wound.

The point I wish to make is that no one method is applicable to all wounds. The first indication is the thorough exploration of the wound, the painstaking removal of all foreign material, excision of sloughs, and ample provision for drainage. At this stage continuous irrigation is of distinct value, because it dilutes the discharge and in this way greatly facilitates drainage. The use of antiseptic solutions, such as Daufresne's, used according to Carrel's method, is to be advised if the wound is one that can be thoroughly made accessible to the action of the antiseptic, in which case it does not seem to make very much difference which of a number of antiseptic solutions is used. At Ris-Orangis we divided the patients into series of ten, and treated the patients in each series with a different antiseptic solution, such as Dakin's, Wright's hypertonic saline, iodin solutions in different strengths, acetic acid solution, and sodium bicarbonate solution, with control cultures twice a week. Our results failed to show any distinct difference in the power of the different antiseptics used to shorten infection and hasten granulation — when the wounds were properly drained the infection soon subsided — but they did show that continuous irrigation, while of distinct value during the active suppurating stage of the wound, should then be discontinued and dry dressings substituted. Prolonged continuous irrigation seems to have a tendency to produce edematous, flabby granulations, and to retard the healing process.

In badly comminuted fractures, which are nearly all complicated by infection, besides thorough drainage, all loose, detached pieces of bone should be removed, as they only lead to persistence of infection; but pieces of bone that are not detached should be left sacredly alone, because they often spell the difference between a useful limb and a flail one. After two years in France, the only criticism of French surgery which I should dare to offer is that a few surgeons at the front have a tendency to make too many resections of comminuted fractures, thereby leading to pseudarthrosis and great shortening. The proper treatment of fractures and of bone injuries in general is an important part of the work of the military surgeon. Probably no one has done better work in that field than Dr. Joseph A. Blake, formerly of New York, who, by bringing together the ideas of a number of other surgeons with some of his own, has perfected an ingenious and simple method of treating fractures by suspension,

Fig. 9.—Right arm torn off by shell. Wound badly infected. Drainage and wet dressings. (Photograph by the author.)

with most creditable results. Flint[5] of New Haven, working at Passy, near Sens, also used the suspension method with a modification of details in its application. It is surprising how well most of these fractures unite under proper treatment; but when they do not unite,

5. Flint: The Treatment of Fractures by Methods of Suspension and Extension, Ann. Surg., June, 1916.

because of a too great loss of substance, Albee's method of autogenous bone transplantation facilitates the restoration to usefulness of limbs which, in years past, would have been doomed to amputation. Amputation is, as it should be, a measure of last resort, and, as the methods of dealing with infection and fractures are improving, the number of amputations is diminishing. The importance of the after-treatment of these fractures and joint injuries was soon realized by the French surgeons, and the Service de Santé has established in different parts of France large hospitals, thoroughly equipped to give mechanotherapeutic, electrotherapeutic and orthopedic treatment to large numbers of men.

The "plastic" restoration of losses of substance in the soft parts is another important phase of military surgery, and the keen surgeon, who is interested in plastic work, will find much stimulation in following the work of such men as Morestin of the Val de Grace, in Paris.

The treatment of gas infection depends entirely on the stage of the disease when first seen. If the injured part shows only a limited area of distention, with or without crepitation, the first indication is to lay open the infected area by multiple free incisions, and to remove all foreign material; the incisions are to allow the escape of gas, and in this way to prevent the destruction of muscle tissue. After ample drainage has been provided for, continuous irrigation may be tried. Taylor, after extensive experiments, advises the use of a 1 per cent. solution of quinin hydrochlorid. If, in spite of these measures, the crepitation continues to extend, no time should be lost in vain hope; the limb should come off at once. If the infection is located in the thigh, the amputation should be at or near the hip joint. Various methods have been tried, such as subfascial injections of oxygen gas or peroxid, but the results have not given much faith in such measures, in spite of their apparently sound theoretical basis.

The greatest lesson to be learned from the surgery of this war can be summed up in the two words, "intelligent conservatism."

THE PRODUCTION OF AN ANTIPOLIOMYELITIC SERUM *

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The many deplorable deformities attendant on infantile paralysis, together with the high mortality of recent epidemics, demands that a most intensive study be made to discover some therapeutic measure which may curtail the ravages of this disease. A study of the recent epidemics in Chicago, New York and elsewhere has revealed certain constant bacteriologic findings. What appears to be the same peculiar microorganism has been repeatedly isolated from the tonsils,[1] brain, spinal cords[2] and cerebrospinal fluids[3] of patients in widely separated cities. The presence of this polymorphous organism so constantly in the spinal fluid during life,[4] even shortly after the onset of the paralysis, and the discovery that the coccus remains in the spinal fluid and can be readily isolated in pure culture several weeks after the onset of the disease, not alone offers a most important clinical diagnostic procedure but also suggests at once a source for obtaining the organisms both for experimental biologic studies and for animal immunization experiments. There is evidence to show that the coccus so constantly present in poliomyelitic spinal fluids is not present in normal cerebrospinal fluids, nor has it as yet been isolated from the spinal fluid of patients with scarlet fever, varicella, diphtheria or other diseases presenting more or less confusing clinical similarity with infantile paralysis. These studies will be made the subject of a subsequent communication.

A therapeutic measure which may ultimately offer hope in this disease would seem to be the production of a specific antiserum for the causative organism. The vital question apparently centers on whether or not the quantities of antibodies produced in animals by methods of immunization will suffice to exert either sufficient antibactericidal action or, what may be of even greater moment, to effect the neutralization of the toxins formed by the bacteria. It must be admitted that the most efficient antiserums have been obtained with those organisms which produce potent toxins. The meager evidence at hand suggests that the pathologic changes in poliomyelitis may be the result chiefly of the endotoxic products of the micro-organism. If this proves to be correct, then the problem appears more complex, since endotoxins do not as a rule produce highly potent antiserums possessing great therapeutic value in the treatment of human infections.

To determine these questions, animal immunization experiments were begun, Nov. 1, 1916. A detailed study of the production of an immune serum for the organism isolated from poliomyelitic cases forms the basis of this paper.

IMMUNIZATION OF ANIMALS

Three healthy sheep, two lambs and four rabbits were selected and immunized according to the rapid method described by Amoss and Wollstein.[5] They showed that an equally potent serum can be produced in from eight to twelve weeks by their method, instead of in from eight to twelve months, as required by previous immunization methods. The animals received intravenous injections of living organisms in increasing doses on three successive days, followed by periods of rest of seven days. The twenty-four hour growth on a dextrose agar slant was suspended in 2 c.c. of sterile normal salt solution, and 0.1 c.c. of this suspension, or one twentieth of an agar slant, was slowly injected in 10 c.c. of physiologic sodium chlorid solution into the jugular vein of each sheep. The rectal temperature was recorded hourly, and a febrile reaction following each single injection served roughly to gage the optimum dosage. Twenty-four hours after the first injection, 0.2 c.c. suspension and on the third day 0.3 c.c. of the foregoing suspension of bacteria in 10 c.c. saline solution were injected intravenously. This was followed by a period of rest of seven days, when the second series of injections was instituted,

* From the laboratory of pathology of the Cook County Hospital.
* This work has been very materially aided by a special grant made by President Peter Reinberg and the members of the Board of Commissioners of Cook County, Ill.

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5. Amoss, H. L., and Wollstein, Martha: A Method for the Rapid Preparation of Antimeningitis Serum, Jour. Exper. Med., 1916, **23**, 403.

0.3 c.c. being given the first day, 0.4 c.c. the second day and 0.5 c.c., or one fourth of an agar slant, the third day. The first series of injections consisted of a group of five representative strains of the coccus isolated from poliomyelitic cerebrospinal fluids. For the second series, five strains isolated from poliomyelitic brains and cords at necropsy were utilized. To each of these representative groups new strains have been added, until now at the fifth series of injections each group consists of ten different strains of the micrococcus.

Small desensitizing doses are regularly employed during the first injection of each series, and after a lapse of two hours the full dose is given, the danger thus being avoided of any anaphylactic reaction and sudden death of the animals. Autolysates of the coccus were prepared by suspending cultures in physiologic sodium chlorid solution and incubating for twenty-four hours. These autolysates were alternated with the living organisms in the serial injections. The maximum dosage given to date consisted of 4 c.c. or two agar slants from the pooled growth of twenty different strains of the organism. Those strains of the coccus which are not agglutinated in varying dilutions of the immune serum have been incorporated in the groups used for serial immunization, thus producing a polyvalent potent antiserum.

The progress of antibody formation in the sheep serums was studied by agglutination, complement fixation and more recently by animal protective experiments. A steady rise in the antibody content of the serums has been noted following each serial injection. Seven days after the fourth serial injections, agglutination was complete at 1:5,000 dilution of the serum, and complement fixation was complete at 1:200. Thus far, as might be expected, it has been quite definitely proved that the organism of poliomyelitis stimulates the formation of antibodies in the blood stream of animals undergoing the process of immunization.

Flaccid paralysis of the left foreleg of a young lamb undergoing immunization; complete recovery twelve hours after intraspinal injection of 1 c.c. immune serum.

VIRULENCE OF THE MICRO-ORGANISM OF POLIOMYELITIS

In studying the virulence of the organism, young rabbits from four to eight weeks of age and of approximately equal weight and size were selected in groups of threes and inoculated intravenously with decreasing doses of various strains of the coccus obtained both from brains and human poliomyelitic spinal fluids. Later it was found more satisfactory to inoculate white mice intraperitoneally in series. These animals are quite susceptible to the germ, and rapidly develop a fatal septicemia. One-tenth c.c. of Strain Leitz caused the death of white mice in fourteen hours. The amount of cultures required to produce paralysis or death in rabbits is relatively large. Recent isolated cultures of the coccus are naturally more virulent than strains incubated for varying periods of time. It should be admitted that certain strains exhibit but slight pathogenicity, even when recently isolated.

ANIMAL PROTECTIVE EXPERIMENTS

Table 1 indicates that the polyvalent immune serum possesses a certain limited degree of protective value for white mice. Two-tenths c.c. of the serum protected against ten minimum lethal doses of Strain Leitz. Normal serum, however, and even sterile bouillon in 1 c.c. amounts exhibits some definite degree of protective value. The conditions of this experiment are perhaps rather severe since ten minimum lethal doses of Strain Leitz were employed—a strain recently isolated in a fatal human case and not as yet incorporated in the lots employed for the immunization of the animals.

Table 2 indicates the protective value of immune serum as compared with normal serum and bouillon when young rabbits are utilized. The strain Anna employed in this experiment was recently isolated from human poliomyelitic spinal fluid. One-tenth c.c. of the immune serum protected a 343 gm. rabbit against one minimal lethal dose of Strain Anna. It is evident from this table that normal serum and even bouillon were able to delay the course of the infection in rabbits, but apparently could not protect against either paralysis or an ultimate fatal termination of the infection.

After it had been determined that immune serum possessed certain properties not present in normal serums, a study was undertaken to determine the mechanism of the protective action. White mice were injected intraperitoneally with varying dilutions of immune serum and constant quantities of the organisms. At the end of thirty minutes and again at the expiration of one hour, a few drops of the peritoneal exudate were aspirated from the peritoneal cavity, and stained specimens were examined microscopically. It was determined that immune serum in vivo causes a rapid exudation of cells into the peritoneal cavity, chiefly polymorphonuclear leukocytes and smaller numbers of mononuclear lymphocytes. At the end of an hour most of the bacteria are readily visible within the leukocytes. The few remaining extracellular organisms appear clumped together, and many are markedly swollen to several times their normal size. Others have apparently undergone complete disintegration. Pfeiffer's phenomenon was complete, or nearly so, at the expiration of one hour with the higher concentrations of the immune serum.

In an attempt to determine whether or not the coccus of poliomyelitis produces toxins, eight day broth cultures were passed through a Berkefeld filter, and varying amounts of the filtrate were injected into the peritoneal cavity of mice. Relatively large amounts of the filtrate were required to produce toxic effects or death.

PROTECTIVE EXPERIMENTS IN MONKEYS

For my next experiments I utilized monkeys, since it is generally admitted that poliomyelitis can be experimentally produced in these animals. Furthermore, the histopathologic changes in the monkey closely simulate the disease as we are familiar with it in man. Accordingly, three healthy monkeys were selected, and after the lethal dose of the organism for the monkey had previously been determined, the first animal was inoculated intraspinally with 1 c.c. of Strain Leitz. The second animal received a similar dosage of the same culture plus 1 c.c. of normal sheep serum. The third monkey received an intraspinal injection of 1 c.c. of Strain Leitz plus 1 c.c. of polyvalent immune serum. The results follow:

TABLE 1.—ANTI-INFECTIOUS POWER OF POLYVALENT SERUM *

Strain Leitz	1 C.c. Pooled Normal Sheep Serum	1 C.c. Sterile Bouillon	0.1 C.c. Immune Serum	0.2 C.c. Immune Serum	0.3 C.c. Immune Serum	0.4 C.c. Immune Serum
10 minimum lethal doses	Protection in 2	Protection in 1	Protection in 3	Protection in 4	Protection in 4	Protection in 4

* Illustrating the protective value of immune serum when white mice are inoculated simultaneously with serum and cultures; 0.2 c.c. of the polyvalent antiserum protected against 10 minimum lethal doses of Strain Leitz.

EXPERIMENT 1. (Case 10).—Dec. 8, 1916, at noon, a large *Macacus rhesus* monkey was etherized, and the lower lumbar region shaved and sterilized. Lumbar puncture was performed, and 1 c.c. of clear spinal fluid withdrawn. Intraspinal injection was given of 1 c.c. of a mixed brain and spinal fluid culture of Strain Leitz plus 1 c.c. of normal sheep serum. At 4 p. m. the animal had recovered from the anesthetic and was quiet in the cage. December 8, at 9 p. m., the animal was sick, and not attentive to surroundings. December 9, at 10 a. m., the monkey was acutely ill. It lay prostate in the cage, could not sit up, and fell over when lifted upright. There was marked weakness of the right front arm with definite wrist drop. Lumbar puncture was performed, and 1 c.c. of clear spinal fluid withdrawn. Stained smear of the sedimented spinal fluid revealed many polymorphonuclear leukocytes. Many gram-positive diplococci were scattered uniformly throughout the field, chiefly extracellular. Cell count revealed 920 per cubic millimeter.

One c.c. of immune serum was injected very slowly intraspinally. December 10, at 10 a. m., the animal exhibited a complete flaccid paralysis of both arms and a marked weakness of the hind legs. Lumbar puncture was performed, and only a few drops of clear spinal fluid obtained. Stained smears revealed marked agglutination of the organisms with swelling and dissolution of many of the bacterial bodies and vacuolization of the leukocytes. There were many intracellular organisms. One platinum loopful of the spinal fluid was inoculated into each of a series of agar tubes, and blood agar plates were made. A similar procedure was carried out with the spinal fluid before the administration of immune serum. At the end of twenty-four hours' incubation, the average number of colonies per plate before injection of the immune serum was eighty-four. Twenty-four hours after the intraspinal injection of the immune serum, only twenty-four colonies were counted per plate. This was interpreted as a definite antibactericidal action of the immune serum in vivo.

December 10, the monkey died in a convulsion, despite having received another injection of the antiserum.

Necropsy.—There was marked hyperemia of the pia-arachnoid vessels over the cerebral cortex of the brain. The brain tissue was edematous. There was no visible exudate anywhere over the brain or spinal cord. The gray matter of the cord was hyperemic. There were no visible hemorrhages in the leptomeninges.

Microscopically, there was marked interstitial infiltration of lymphocytes in sections of both brain and cord. There was hyperemia of the capillaries in cross section. There was definite degeneration of the motor ganglion cells. Neurophagocytosis was visible in the cord and also in the intervertebral ganglia.

On bacteriologic examination, a pure culture of the original gram-positive coccus was obtained in cultures from the cord, brain, spinal fluid and heart's blood.

An analysis of this case shows, first, that normal sheep serum afforded little if any protection against the infection. Twenty-four hours after the inoculation, and at a time when the course of the infection was undoubtedly decided, immune serum exhibited certain limited bacteriolytic properties, but could not save the animal's life.

EXPERIMENT 2 (Case 12).—Dec. 8, 1916, at 10 a. m., a large *Macacus rhesus* monkey was etherized, and 1 c.c. of Strain Leitz slowly injected intraspinally after the previous withdrawal of 0.5 c.c. of clear spinal fluid. December 9, at 9 a. m., the animal lay prostrate in the cage, and was very weak and tremulous. He was unable to support himself in an upright position. Lumbar puncture was done, and a very few drops of clear fluid obtained. Stained smears revealed many small diplococci, sharply staining, and evenly distributed throughout the field. Bacteria were chiefly extracellular. There were many polymorphonuclear leukocytes and smaller numbers of lymphocytes. One c.c. of immune serum was injected intraspinally. At 10 p. m. the animal was resting quietly. He refused food. Rectal temperature was 38 C. (100.4 F.).

December 10, the monkey was active and bright in his cage. Lumbar puncture was done, and smears revealed only a very few swollen diplococci, chiefly intracellular. Cell count revealed 382 cells per cubic centimeter. December 18, the animal remained well. No paralysis was present.

In this case we feel that the immune serum was able to prevent a fatal course of the disease, and apparently arrested the infection a considerable period of time after the inoculation of the bacteria.

TABLE 2.—PROTECTIVE VALUE OF IMMUNE SERUM IN YOUNG RABBITS *

Weight of Rabbit, Gm.	Amount of Culture, C.c.	Protective Substance	Result
314	0.2	None	All dead within 48 hours
315	0.4		
322	0.6		
		Immune Serum	
343	0.2	0.1 c.c.	All survived
350	0.4	0.2 c.c.	
356	0.6	0.3 c.c.	
		Normal Serum	
270	0.2	0.2 c.c.	Died after 9 days
275	0.4	0.4 c.c.	Died after 4 days
286	0.6	0.6 c.c.	Died after 3 days
		Bouillon	
318	0.2	0.2 c.c.	Survived
320	0.4	0.4 c.c.	Flaccid paralysis. Death in 6 days
330	0.6	0.6 c.c.	Died after 5 days

* Illustrating the protective value of immune serum as compared with normal sheep serum and sterile bouillon. Simultaneous intravenous injection of serum and cultures after previous incubation for thirty minutes.

EXPERIMENT 3 (Case 14).—Dec. 8, 1916, at 2 p. m., a small ring-tailed monkey was inoculated intraspinally with 1 c.c. of Strain Leitz plus 1 c.c. of immune serum after the previous withdrawal of clear spinal fluid. Serum and organisms were incubated together for thirty minutes previous to inoculation into the monkey.

December 9, at 10 a. m., the animal raced and climbed about the cage apparently little worse for the infection. December 18, the monkey remained well.

In this experiment the conditions were not entirely analogous to those of the former cases because of the incubation of the serum and culture previous to inoculation. The animal utilized was also of a different species. From the foregoing series of experiments, however, it would seem fair to conclude that immune serum possesses the power to protect monkeys against an otherwise fatal result.

During the course of immunization of the sheep, one of the lambs which had received but two series of injections — one intraperitoneally and the second intravenously — developed a complete flaccid paralysis of one front leg. The limb was carefully examined to exclude any possible trauma. A marked flaccid paralysis was present, and the animal limped along on the other three legs, dragging along the paralyzed extremity in a flail-like manner. At no time during a careful observation of ten hours did the animal bear any weight on the paralyzed limb. Ten hours after the onset lumbar puncture was performed, and 1 c.c. of clear spinal fluid was withdrawn. A twenty-four hour culture yielded a growth of the gram-positive coccus of poliomyelitis. One c.c. of immune serum was injected intraspinally. The following morning the animal had regained complete use of the paralyzed leg and has remained well since.

The final test of the value of any antiserum is its therapeutic efficiency in human infections. I do not wish to apply, at this time, the results of animal experiments to man. Suffice it to say that we have under treatment at the present time a child afflicted with the cerebral type of poliomyelitis. The gram-positive coccus has been isolated on several occasions from the spinal fluid by the physician in charge of the case. This patient has received several intraspinal injections of immune serum after the serum had been passed through a Berkefeld filter and tested for sterility by repeated cultural experiments. Thus far it has been possible to sterilize the cerebrospinal fluid and to bring about a certain definite improvement in the clinical symptoms of the patient. The details of this case will form the subject of a separate communication. From the evidence at hand it would seem that poliomyelitis is in many cases — probably always in the acute fulminating types of the disease — at first a general bacteremia with the rapid localization of the microorganisms to the central nervous system. If this ultimately proves to be true, it would seem fair to conclude that immune serum may be of great value in the treatment of this disease.

SUMMARY

1. By the process of animal immunization with the organisms regularly isolated from the spinal fluids and the central nervous system of human poliomyelitic patients, an antiserum can be produced. Its therapeutic limitations are as yet unknown.

2. Antiserum prepared in this manner contains agglutinins, opsonins and complement fixation bodies, as well as exhibiting certain antibactericidal properties.

3. It would seem fair to conclude that with potent polyvalent antiserum prepared in this manner, some definite therapeutic value might be anticipated in human cases of the disease.

GENERAL HEALTH CONDITIONS IN BELGIUM

AFTER TWO YEARS OF RELIEF WORK BY THE COMMISSION FOR RELIEF IN BELGIUM

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At the request of the Commission for Relief in Belgium, I spent May, June and July in that part of Belgium occupied by the Germans, in the examination of present health conditions of the population, with special regard to the welfare of the children. In this investigation I had the unremitting aid and counsel of the Belgian physicians and surgeons. The liberty of movement which I enjoyed, as a member of the American commission, enabled me to perform a broad survey of conditions, which, under present military restrictions, is not possible for the very able Belgian specialists themselves to undertake. It is difficult to generalize on the health of the whole population of the country even in normal times, when the aid of every branch of mortality and morbidity statistics can be brought to bear on the investigation, and therefore any generalization which I make in regard to Belgium, in the condition of stagnation in civic functions which exists today, is even more difficult. I had access to many local statistics, hospital reports and individual private statements and information which rendered it possible to reach some conclusions which I believe are not only of value to the relief work, but also of interest to friends of the population.

Broadly viewed, the objective of the inquiry was to determine what the health and nutrition of the population were as a result of the relief which has been given, what changes might be desirable in the character and manner of feeding, and if any other measures for the general health could be instituted.

In a general way, conditions of health in normal times vary greatly in all countries between different economic and social classes. The present economic and political situation in Belgium sharply accentuates these class differences, and therefore points to a discussion of the situation class by class. From this point of view we may divide the population into the well-to-do or so-called upper classes, agricultural classes, and industrial or lower commercial classes.

Well-To-Do Classes.—These classes in Belgium, as in any other country, are the last to suffer in any food emergency, and may therefore be dismissed at once as being today in as good physical condition as they were before the war. Certainly there is no particular increase of illness among these classes, and as there are always native provisions to be bought at a certain price in every famine, they do not suffer from malnutrition. The enforced economy and temperance of even these classes has probably had beneficial results from a health point of view. Furthermore, the almost universal response to the duty imposed on this class to care for the less fortunate has given stimulation and occupation, which has possibly had beneficial results and has, at least to some extent, neutralized any damage which might occur from overanxiety.

The Agricultural Classes.—The agricultural communities throughout Belgium may also be said to be in a very good physical state; indeed, so far as one can judge, their material condition has improved

steadily since the arrival of the 1915 harvest. Having first access to the produce of the land, it is obvious that they do not deprive themselves or their families of nourishment; and the high prices which they receive for their surplus produce have increased their resources, so that they will undoubtedly be in a better condition after the war than they were before.

These two classes probably embrace about 35 per cent. of the entire population of the occupied territory of Belgium.

Industrial and Minor Commercial Classes.—When one turns to the industrial communities in the large cities, which have a greater percentage of the population dependent on the paralyzed industries and commerce of the country for their livelihood, there exists a situation in which the general health is open to more doubt and where, in any event, it is maintained only by extensive organization of relief and protective measures. In a general way, an average of 9,000,000 pounds of fat and 160,000,000 pounds of cereals are monthly imported from abroad by the relief commission and delivered mainly to these classes, and with this supply, together with such supplementary native supplies as can be procured, their nutrition must proceed. As this class must embrace about 5,000,000 people, it is obvious that their food supply is very close to the actual necessities of nutrition. It is chiefly with regard to the efficiency of this supply, therefore, and the results on the nutrition of the population for nearly two years that this inquiry has been directed.

Fig. 1.—Type of school lunch which the Commission for Relief in Belgium is instituting throughout the country as a result of the recommendations in this report.

It must be stated at once that, even with these supplies, the population has existed on the narrowest margin of dietary necessaries, and that the very careful balancing of the protein, fat and carbohydrate values of this minimum ration must, as in the past, continue to be a matter of concern. The constantly changing situation as to local meat and milk supplies, by seasonal changes and gradual depletion of stock, must be watched and met, for while the general condition of this class, with the exception of the increase in tuberculosis, is not acute, certain definite situations are developing which must be reinforced or serious results will ensue. It may be said at once that the increase in tuberculosis appears to me to be mainly a factor of nutrition, and if conditions were now to return to normal, the unaffected adults would, on liberal nourishment, probably return to their former health conditions within two or three months. This, of course, is not true of those who have become affected with tuberculosis, nor is it so true of the adolescent children especially, who are probably suffering more than any other single group in this class, although the radical measures now adopted of separate and extra feeding for the adolescent children in the schools may stem this deterioration. I am happy to say that the great devotion and stimulation of relief work for the infants and children of Belgium has raised their condition on the whole to rather better than normal. Before a summary of the specific conditions of each of the age divisions of this class is given, it is desirable to discuss the tuberculosis situation as this bears on the entire population.

TUBERCULOSIS SITUATION

That the undernutrition of this class especially is mainly responsible for the fact that tuberculosis is increasing rapidly will be easily realized when one considers that the average consumption of fat lies somewhere between 20 and 30 gm. per day per individual. This, of course, is far too low, and especially so for the adolescent years. The lack in meat, both from the question of supply and on account of the high prices, makes it almost impossible for this class to obtain any animal protein in this way. The growing lack in the milk supply is another important factor in this nutritional problem, and during the coming winter, when there is a diminution in the native supply of vegetables and fruit, which, to a certain extent, this class is able to procure in summer, the ration will be considerably lower than it was during that season, and unless something can be introduced especially for the tuberculous of this class, the whole tuberculosis situation will undoubtedly progress more rapidly than it has in the past. As I shall show from the hospital reports and statistics, many cases of tuberculosis which were supposed to be cured are reappearing. From the fact that the sanatoriums and hospitals are all crowded, a continually increasing number of foci for the distribution of tuberculosis are rapidly forming and, under the present military conditions, it is difficult to carry on any educational campaign or any of the ordinary preventive sanitary measures against such a widespread increase in this disease.

The staff of every hospital and dispensary which I visited commented on the marked increase in the number of patients who are attending their clinics. The increase in the tuberculosis clinics was perhaps most marked of all, being in some cases over 100 per cent. more than they were before the war. Every tuberculosis sanatorium in Belgium is crowded, and the waiting lists of all the sanatoriums are larger and the cases waiting more acute than they were before the war. The following statements from various hospitals indicate the same conditions:

Dr. Verhoogen, the chief of the medical service of St. Jean Hospital, Brussels, states that there has been a considerable increase in the number of patients with

tuberculosis coming to his general medical clinic. He finds that persons with old arrested cases of tuberculosis are returning in large numbers — cases which he had considered cured for a period of more than five years — and that their relapses are of a rapid and grave character. He finds that there is a more acute involvement of the lungs, there are many more cases of glandular tuberculosis and tuberculosis of the peritoneum than formerly, and he is especially struck by the increase in cases of tuberculous meningitis, probably the most fatal and fulminating type of tuberculosis that exists. He states the significant fact that his wards, which normally have ninety-eight beds, have had to be enlarged to 106, and that whereas during the summer he usually has had very few patients, in June and July, 1916, he had all his beds filled, and 35 per cent. of the cases were active tuberculosis; a higher percentage of tuberculosis than he has seen before in his wards.

In the St. Pierre Hospital in Brussels, Dr. Naewelaers, chief of the children's service, states that for the year 1912 he had only fifty-three patients with active tuberculosis in his infant ward, and in 1915 he had 125, but that in the first five months of 1916 he has had fifty-five, which, for the year 1916, would make 133 cases, and they have been more severe than formerly. The surgeons in all the children's hospitals state that persons with operative cases are much slower in recovering, and that open wounds in many cases refuse to close.

Fig. 2.—Canteen for debilitated children, showing Dr. and Mme. Lathioir. This is the largest canteen for debilitated children in Belgium. Last summer, 1,500 children were being fed daily.

The chief surgeon of the throat clinic of St. Pierre Hospital in Brussels states that the increase of tuberculous conditions of the throat, which is one of the rarer forms of tuberculosis, has been most marked. He gives the following figures for his clinic: In 1912, 1.5 per cent. of his patients had tuberculosis of the throat; in 1913, 1 per cent.; in 1914, 1.5 per cent.; in 1915, 2.2 per cent., and for the first five months in 1916, 4 per cent., making an increase of 150 per cent. between 1914 and 1916.

The chief surgeon of the children's clinic of one of the largest hospitals in Brussels reports the following figures of increase in tuberculosis: During the years 1909 to 1913 there was an average of 3.34 per cent. of his patients who had tuberculosis; in 1914, 5.9 per cent. had tuberculosis; in 1915, 5.4 per cent., and the percentage for the first five months of 1916 was 12.2 per cent.

Dr. Tieren, president of the Antwerp Provincial section of the Belgian League Against Tuberculosis, states that since 1913 the number of new patients with tuberculosis who came to the Institute Van den Nest increased two and one third times during the first four months of 1916, as compared with the same months of 1915. He states that not only have the cases of tuberculosis become more frequent, but that they are also more malignant; cures are much harder to obtain, and old cases, apparently cured for five years or longer, are reappearing in large numbers.

Dr. Wysen, head of the hygienic service of Antwerp, gives the following figures to show the number of deaths from tuberculosis (the percentages are expressed on the total number of deaths in Antwerp, not counting deaths in the floating population): For the first seventeen weeks of each year the mortality from tuberculosis has been as follows: 1909, 8 per cent.; 1910, 8.3 per cent.; 1911, 8.6 per cent.; 1912, 8.6 per cent.; 1913, 7.1 per cent.; 1914, 9 per cent.; 1915, 9.5 per cent., and 1916, 13.2 per cent.

In Namur also the mortality from tuberculosis has increased; the number of deaths from pulmonary tuberculosis and tuberculous meningitis for the year 1915 was thirty-eight, while for the first half of 1916 it had already reached thirty-four. In the Agglomeration of Brussels the following figures show the increase in mortality from pulmonary tuberculosis: In 1913 there were 502 deaths from pulmonary tuberculosis in the Agglomeration of Brussels during the first semester; for the same period in 1914 there were 521, for 1915, 506, and for the first semester of 1916, 662.

Dr. Lorent, physician for the poor in one of the large poor sections of Brussels, states that since the beginning of the war, and more especially since the beginning of the year 1916, cases of tuberculosis have become more frequent and have taken a more rapid and serious course. The physicians from one of the large dispensaries in Antwerp state that the greater part of the adults who visit the dispensary for the first time declare that their weights have diminished, and they state the average diminution to be over 5 kg., or about 10 to 11 pounds. Among tuberculous patients whom they are treating and to whom they have been giving a supplementary diet, they note that out of ninety-five tuberculous patients receiving the supplementary meals, fourteen gained from 0.5 to 3 kg.; twenty-three kept their previous weight, and fifty-eight lost from 1 to 9 kg. during an observation period of one month. During the same period, of eighteen nontuberculous patients who were under observation but who did not receive a supplementary diet, none increased in weight, five remained stationary and thirteen lost from 1 to 7 kg., that is, from 2½ to 15 or 16 pounds. The same dispensary gives the following figures for the attendance at their clinic: For the first three months of 1915 they had an average of 158 visits a month, and for the first three months of 1916 an average of 589 visits a month. The actual cases of tuberculosis had more than doubled during this period.

Dr. Gengou, secretary of the Antituberculosis Society of Belgium, states in a report which he has drawn up, based on a questionnaire sent to all the antituberculosis societies in Belgium, that the information obtained is unanimously to the effect that the

spread of tuberculosis has progressed among the poorer classes, and that among the children of these classes the surgical types of tuberculosis have increased very markedly; for instance, from Verviers, Dr. Gustin states that there is a particular increase in tuberculosis among the working classes in that region. He is of the opinion that this increase is due both to the present conditions which have been created throughout the country and to the fact that the sanatoriums for tuberculosis are all filled, so that acute cases not isolated are spreading the disease rapidly. At Liége, Dr. Malvoz points out that the increase in mortality from tuberculosis there shows a change for the years 1913, 1914 and 1915 of from 164 to 170 to 179, and for the first trimester of the years 1915-1916, from 53 to 64.

Among children, Dr. Gengou finds from his questionnaire that the unanimous opinion of physicians throughout Belgium is that tuberculous adenitis has increased from five to tenfold. Some go much further in their figures, as, for example, Dr. Mine of Lockern, who states that none of the children of the working and middle classes in his community have escaped glandular congestion. This does not necessarily mean tuberculosis in an active form, but certainly indicates a lower resistance and a field ready for tuberculous infection.

Dr. de Moor, chief physician of the public schools in Brussels, gives the following figures for one of the public schools in Brussels:

Out of 485 boys between 6 and 14 years of age, 305, or 63 per cent., have developed cervical glands, and 190 of this number, or 40 per cent. of the total number, have developed considerably larger glands, 1.65 per cent. having glands which suppurate. In another large school, 482 children out of 683, or 70 per cent., have developed cervical glands, and 276 of these, or 40 per cent., have quite large glands, while 1 per cent. have glands which suppurated.

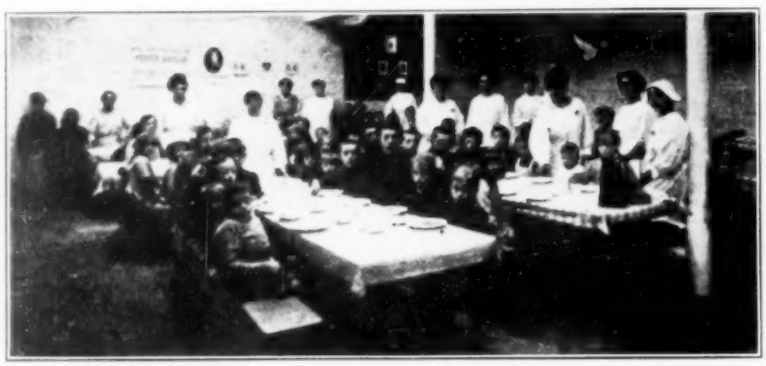

Fig. 3.—Canteen for debilitated children located in a cellar in Brussels.

These conditions are especially true of the large centers, such as Brussels, Antwerp, Ghent, Liége, Mons and Charleroi. It is to meet this situation in the schools that it has been proposed, in a report which I made to the relief commission, to extend school lunches. This is especially important for adolescent children in the upper form schools. The school population of Belgium for the lower form schools is approximately 885,000 children, and during the last semester they have been given a supplementary school lunch provided by the commission. It was determined, if it should be possible to get the necessary imports, to extend these school lunches to the upper form children from the beginning of the next semester, October 1. This would probably include about 1,500,000 children in Belgium, or approximately the total needy schoolchildren population, and from 500,000 to 750,000 children in the North of France. It is especially important for the better development of the children and for the protection of the pretuberculous and tuberculous individuals who must remain at home that there should be an increased diet, with special measures to overcome the present deficiencies in fat.

As I have already stated, the tuberculosis sanatoriums and hospitals are all filled and have large waiting lists. Many of the sanatoriums for tuberculosis are now finding it difficult to obtain a sufficient supply of milk for their patients. The reduction amounts to as much as 50 per cent. in some cases. With the increased necessity for giving these patients supplementary diet, together with the patients who must remain at home and should also have additional supplies of milk and fat, the problem of special imports for the sick, especially the tuberculous, is a very important one.

The tuberculosis situation demands increased activity, but under present conditions it is very difficult to carry on an active antituberculosis campaign. There should be, however, an increased facility for the supplementary feeding of tuberculous patients. New dispensaries should be opened in the large centers where they do not exist at present, and from these centers, with special visiting nurses, a considerable amount of preventive work can be carried on. It is especially important to reach homes in which there are patients with active cases of tuberculosis who at present cannot enter tuberculosis sanatoriums. Special supplementary diets should be furnished these homes, and where possible provision should be made for sending children from them to the country or to temporarily improvised sanatoriums.

In connection with the deficiency in fat and animal protein, the lack of one of the most important food supplies should be noted. Already throughout Belgium the milk supply is not sufficient for the needs of the children and the sick, and this is especially true of the larger cities. Milk, as at present sold, is not only very expensive, but it is also of poor quality, being diluted or skimmed. The commission is already taking active measures to obtain special herds of cows to supply a certain amount of fresh milk to children's canteens or hospitals, but the natural supply can nowhere meet the demand, and during the coming winter the present supply will be even smaller than it is; hence definite and active measures should be taken for supplying some good milk products, such as condensed milk or milk powder, for the children and sick of Belgium.

GENERAL ADULT POPULATION

That the condition of the adults of these classes is being somewhat disturbed, although not severely damaged, is evidenced by such facts as these: It is the current opinion of employers and those competent to judge that the laboring man of the working classes in the cities and industrial centers is not able to do the amount of work he was formerly capable of doing. His energy and power of production are considerably

less, and he becomes fatigued much more easily than usual. Reports from physicians who care for these classes note that there has been marked loss of weight, even among those who are not sick, since 1914; they estimate that about 80 per cent. of the population have lost weight and that the average loss is from 2 to 3 kg., that is, from 4½ to 7 pounds. This they attribute to insufficient nutrition, especially to the low quantity of fat and animal proteins which they are receiving, to mental worry and to the epidemic of grip which was very extensive during last winter and spring.

Likewise, among schoolchildren, one of the reports from a large public school for boys shows that out of 773 boys, for the year 1914-1915, 75 per cent. increased in weight, 15 per cent. diminished, and 10 per cent. remained stationary. In the same school during the year 1915-1916, out of 607 boys, 68 per cent. gained weight, 25 per cent. diminished, and 7 per cent. remained stationary.

DIMINUTION IN MATERNAL NURSING

Another keen index of the subnormal condition of the adults of these special classes may be found in the records of the maternity hospitals frequented by the wives of working men. The reports from maternity hospitals at Antwerp, Brussels and Liége all show that the weights of the babies born at the present time are less than the average of infants before the war. For instance, Dr. Dauve of Antwerp, chief of the maternity hospital of Ste. Anne, states that the new-born are generally debilitated and have the appearance of prematurely born infants whose weight and length are under average; they weigh on an average from 2,000 to 2,500 gm. and measure 47 cm. (19 inches). (The average weight of a new-born infant should be between 3,000 and 3,500 gm. and the average length 20 inches.) The lactation of the mothers leaves much to be desired, and the gain of the new-born, which should be 180 gm. a week on an average, is now only 50 gm. In several maternity hospitals, the incubator rooms, containing from four to twelve incubators, were always found filled, and the statement was made by the chiefs of the services that before the war there were rarely more than one or two underweight or premature infants in these incubators at any one time, and often there would be none for several months, whereas, during the past year these incubators have never been empty. At the St. Pierre Hospital, Brussels, many of the underweight infants have to be kept in improvised incubators.

Fig. 4.—School lunch of the type being inaugurated by the commission throughout Belgium as recommended in this report.

Another most significant fact is derived from the maternal canteens for nursing mothers. At the beginning of the war the maternal canteens found that the mothers could nurse their infants for a period of nine months; but now, even with supplementary diets in the form of very substantial daily meals, they are barely able to nurse them for seven months, and this in the face of the fact that during the past year expectant mothers have been receiving meals for a period of two or three months before the arrival of the child. These facts undoubtedly indicate a lower general health and vitality of the mothers of these classes.

DIMINUTION IN BIRTH RATE

As in all warring countries, Belgium has suffered a great diminution in the birth rate. This is so significant that it calls for special attention. Compared with the average birth rate of the first semester of the five year period 1909-1913, the birth rate has fallen in 1916 in the Agglomeration of Brussels, 48 per cent.; in Antwerp, 41 per cent.; in Louvain, 41 per cent.; in Heverle, 41 per cent.; in Namur, 42 per cent.; in Mons, 36 per cent., and in Liége, 41 per cent. Such are the alarming decreases in all parts of Belgium that some explanation must be sought. Probably the lower vitality and mental anxiety have a great deal to do with this lower birth rate. Certainly the depopulation of men from Belgium is not in such a proportionate rate as in the other warring countries and not in such proportion as is the reduction in the birth rate. However, though there is no general mobilization, the absence of thousands of husbands from the working classes must have something to do with the reduction in the birth rate; further, the lower nutrition in these classes and the fear of not being able to provide for their offspring must be strong factors toward a voluntary reduction.

INFANTS AND CHILDREN

I have already covered the condition of children fairly completely in the discussion of tuberculosis. There are certain other facts, however, that are of considerable significance. Rickets, which is entirely a nutritional condition, has increased very markedly, as is shown from the following figures, derived from one of the large children's clinics in Brussels: In the period 1909 to 1913, 4.73 per cent. of the children who attended the clinic had rickets; in 1914, 8 per cent.; in 1915, 11.4 per cent., and in 1916, 21.3 per cent. The diminution in the weight of schoolchildren has already been mentioned.

Not every aspect of the health conditions of the children in Belgium, however, is as gloomy as these facts would indicate. Infant mortality has fallen since the beginning of the war, and deserves special comment. (By infant mortality is meant the deaths of children under 1 year of age on the basis of 1,000 births.) In the Agglomeration of Brussels, for the

first trimester of 1904 to 1908, there were 124 deaths of infants, on an average, from 0 to 1 year of age for every thousand births; for the first semester of 1916 the infant mortality rate on the same basis was 94, or a reduction of 19 per cent. In Namur the infant mortality has dropped from 150, for the period 1911 to 1913, to 84 for the first semester of 1916. In Namur, however, the deaths from 1 to 5 years are the same for the first half of 1916 as they were for the whole of 1915. In Antwerp the infant mortality has dropped 8 per cent., while in Mons, one of the largest industrial centers, infant mortality has increased 56 per cent.

In 1915 the deaths from diarrhea in Liége, of children under 2 years of age, were, for the first semester, forty-three; while for the same period of 1916 they were twenty-three, a diminution of 47 per cent. In Antwerp the reduction in cases of diarrhea is also marked. During the period from 1911 to 1913 there was an average death rate of children under 2 years of age of 749, while during the year 1915, there were only 231 deaths from this cause. In the Agglomeration of Brussels we note the same decrease in diarrheal conditions. In 1913, during the first semester, there were 219 deaths from diarrhea; in 1914, for the same period, 256; for 1915, 156, and for 1916, 81.

PRESENT INSTITUTIONS DIRECTLY FEEDING CHILDREN

It is generally evident that infant conditions are on the whole better than normal, that class having been the object of great solicitude since the beginning of the war. A great many institutions have been created during the war to care for the children. The organization of the work for the children has been divided into canteens:

1. Canteens for nursing and expectant mothers, which, as already stated, furnish a substantial supplementary meal. There are over 13,000 nursing and expectant mothers receiving these dinners.

2. Canteens, often in conjunction with maternal canteens, have been instituted for infants under 3 years of age, in which there are over 52,000 infants receiving milk and cereals. Both these types of canteens have undoubtedly had a great influence on the reduction of infant mortality in Belgium. There is no question that today, in Belgium, more is being done for the mother and the child than was ever done before. Previous to the war there were only two maternal canteens in the whole of Belgium; today there are over 329 canteens for infants. These canteens, in connection with the educational work, the medical supervision which all the canteens have, and the careful regulation of the dietary, both in the canteens and, by an extensive system of visiting nurses, in the homes, have undobutedly had a marked effect on this great reduction in infant mortality. This phase of the child welfare work in Belgium is one of the best examples of the efficiency and result of the extensive and carefully planned preventive measures which have been instituted throughout Belgium by the relief organization.

Besides these canteens for mothers and infants, special canteens have been started to give food, supplemental to the ordinary ration, to debilitated children from 3 to 17 years of age. These children are chosen from the poorer sections, after a medical examination, and receive a supplementary dinner. Each canteen is under the direct supervision of a medical staff, which not only prescribes the proper dietary but also looks after special health problems. A health card is made out for each patient on which the weight is entered from month to month. A review of several hundreds of these cards brings out some interesting facts. It is generally noted that on admission and for the first two or three months afterward, a large proportion of these debilitated children gain in weight. They then reach a stationary period, which lasts for a month or two, and then either stop gaining entirely or lose slightly, so that the average amount gained for a period of a year is considerably below the average amount which children of their respective ages should gain. In these canteens over 25,000 children are being fed at the present time. Up to July 1, 1916, the age limit was 14 years; since July 1, however, this age limit has been increased to 17 years to make room for the thousands of debilitated, adolescent children who, during this period of rapid growth, a period which requires a larger proportional amount of nutrition than any other period of life, require a supplementary diet. It is during this adolescent period that a marked increase in tuberculosis has been noted. As is well known, the most fulminating types of tuberculosis are likely to appear during the adolescent period.

CONCLUSIONS

It may be said that the present general health situation in Belgium is not a gloomy one, considering the circumstances. The well-to-do and agricultural classes are fully up to the normal. In the industrial and minor commercial classes, while there is great privation, as the result of relief organization, the adult population is in a position to quickly recover its normal condition; general solicitude for the children has resulted in an actual improvement in infant conditions to a point above the normal, and the measures now being taken to reinforce the care of adolescent children by a further meal in the schools should quickly bring this class up to a state approaching normality. With the exception of the increase in tuberculosis, the population has been singularly free from epidemics or contagious diseases; for instance, typhoid fever and the children's contagious diseases have been markedly diminished and, except for the epidemic of grip, which was prevalent last winter and spring, there have been no serious epidemics since the occupation. The high degree of skill of the Belgian medical profession, its devotion to the people, and the watchful eye of the army of occupation in the protection of its own interests, with the military restriction of movement of the population, have probably all contributed to this end.

The general solicitude of the whole relief organization over the question of health and nutrition has been insistent since its inception, and the magnificent work which has been performed by the women of Belgium, in the care of the child, is beyond praise. The maintenance of these measures, both as to nutrition and welfare, by the relief organization, is an absolute and daily necessity to the population. The cessation of the commission for relief in its labors, for a single month, would unquestionably bring a physical disaster to the industrial and lower commercial classes.

Poor Milk.—If poor milk as a commodity of commerce commands the same price as good milk, and is cheaper to produce, we may expect the milk supply to tend to approximate the poorest quality which health officials will allow to be sold.—Hon. E. S. Brigham, *Bulletin*, Vermont State Board of Health, Dec. 1, 1916.

AURAL TYPHOID CARRIERS: A REPORT OF TWO CASES

A. B. BENNETT, M.D., WASHINGTON, D. C.

The usual understanding or definition of typhoid carrier is a person who, though apparently well, has the bacilli of typhoid fever in the stools or urine. There have not been many reports of cases in which the typhoid organism has been cultured from other discharges in persons otherwise apparently well. Therefore I believe it worth while to report the following cases:

CASE 1.—B. S. N., man, white, aged 34, with negative family history, in 1898, while serving in the U. S. Volunteers in Porto Rico, suffered a severe attack of typhoid fever. Ever since then there has been a chronic purulent discharge from the left ear with an occasional acute exacerbation. When I saw him, the temperature was 100, the mastoid was tender, there was a free flow of creamy pus from the left external meatus, the inferior posterior half of the left membrana tympani was destroyed, and the patient complained of severe earache and painful mastoid, which were much worse at night.

Under simple local treatment the temperature subsided and the pain and tenderness disappeared. A culture was taken from the ear, and about ten organisms developed, one of which was culturally typhoid. A second culture was made which showed much fewer organisms and the same typhoid organism. This germ was tested in the laboratory of the U. S. Naval Hospital and proved to be typhoid. It agglutinated in the presence of the patient's blood, and his opsonic index was zero.

I thoroughly cleansed and dried out the ear, and gave the patient five doses of typhoid vaccine. There was a decided improvement in his general health and the aural discharge was very slight. He then left the city and I have been unable to learn anything of him since.

CASE 2.—M. W., girl, white, single, aged 15, with negative family history, had been "born with heart trouble." At 3 years of age she had diphtheria, at 6 measles, at 7 she had the tonsils and adenoids removed, at 10 she had chickenpox, at 11 scarlatina, and at 12 what her mother told me was typhoid pneumonia, which was probably a frank pneumonia. The present illness began one month prior to consulting me, when she had an attack of acute purulent otitis media (left) with considerable pain and discharge. The discharge continued, and on examination I found the left auditory canal filled with pus. There was a perforation of the membrana tympani in the center of the anterior half, and through it projected a small polyp which bled profusely on the slightest manipulation, making the use of a snare or forceps almost impossible. Several applications of trichloracetic acid reduced the polyp to within the perforation, and the discharge lessened but would not cease. A smear from the ear showed a great number of diphtheroid bacilli, gram-negative bacilli, a few *Micrococci catarrhales*, and staphylococci. A culture from the ear developed diphtheroid and gram-negative bacilli. A vaccine was made and seven doses given, increasing from 50 million to 1,000 million, which resulted in an entire cessation of discharge after the seventh dose. The culture was grown and vaccine made by the National Vaccine Laboratory, which reported later to me that the gram-negative bacilli proved to be typhoid bacilli.

Neither of these patients was under my care very long. I was unable to learn of any cases of typhoid that could be traced to contact with these persons, nor was I able to ascertain if they were carriers of typhoid in their urine or stools. However, I believe that the isolation of the typhoid bacillus from the middle ear discharge of two patients is worthy of report.

The Unvaccinated.—People have smallpox because they prefer it to vaccination. . . . The whole population pays for the privilege of having smallpox monopolized by the unvaccinated.—*Bulletin*, Minnesota State Board of Health, December, 1916.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 2017*)

FAT (LIPURIA)

A minute amount of fat (0.02 gm.) is excreted daily. This amount may be increased to 34 mg. by eating large amounts of fat, according to Sakaguchi.[55] He investigated the urinary fat output in various chronic diseases, and found no disturbance of this minute urinary excretion. The fat of the urine may, however, be increased in chronic nephritis when there is fatty degeneration of the kidneys, and is probably usually increased in phosphorus poisoning.

CHYLURIA

This is a rare condition in which a milky urine is due to chyle entering the urinary canals directly from the thoracic duct. Such a condition is generally caused by the burrowing of parasites called filariae. An unexplained chyluria has rarely occurred.

CYSTINURIA

Cystin rarely appears in the urine. Its appearance is due to improper metabolism in the body. Cystin is an amino acid derived from protein, and is normally transformed in the body, its sulphur appearing in the urine as a sulphate. Infrequently cystinuria causes deposits in the pelvis of the kidney or in the bladder. This condition should be treated by a reduction of the amount of protein consumed and by the administration of alkalies. Cystin may be produced by the body proteins, and an endogenous cystinuria may sometimes occur.

ALBUMOSURIA

Excretion of proteoses in the urine constitutes the condition called albumosuria. It may occur in suppurative conditions or processes such as that which takes place during the resolution of a serious pneumonia in which a considerable portion of lung has been involved. It has occasionally been found in leukemia.

BENCE-JONES PROTEIN

The abnormal protein substance termed Bence-Jones protein is probably of endogenous origin. It is generally combined with anemia and does not seem to be a decided symptom of anything, but multiple myeloma or some form of bone-marrow disease. The prognosis for this condition is unfavorable.

UROBILINURIA

Bilirubin is converted in the intestines by bacterial action into urobilinogen and urobilin, which are absorbed by the blood and converted into bilirubin in the liver. Traces are usually found in the urine. When an increased amount appears in the urine, the condition is termed urobilinuria.

BILIRUBINURIA

Any obstruction of the biliary ducts will cause absorption of bilirubin into the blood, resulting in jaundice, and bilirubinuria. The urine becomes brown, and when shaken shows a yellow froth.

If bilirubin appears in an increased amount in the urine it denotes a more or less serious liver disturbance. If a small amount of this bile substance passes

55. Sakaguchi: Biochem. Ztschr., 1913, **48**, 1.

off in the urine it is not harmful to the kidneys; but if a large amount is excreted during an extended period of time, renal irritations, possibly accompanied by albuminuria, may occur.

ALBUMINURIA

Albuminuria may be classed as follows:

1. A symptom of nephritis.
2. Accidental albuminuria causes:
   (*a*) Dietary (alimentary).
   (*b*) Chilling of the body.
   (*c*) Unexplained (frequently due to focal infection).
3. Incidental albuminuria causes:
   (*a*) Cold baths.
   (*b*) Menstruation.
   (*c*) Athletics or other physical strain.
   (*d*) Cardiac weakness.
   (*e*) Irritation in some part of the urinary tract.
   (*f*) Hypertension.
   (*g*) Ether or other anesthesia.
4. Orthostatic (lordotic, cyclic, adolescent).

The term "albuminuria" refers to the presence of serum-albumin in the urine. Nucleo-albumin may be present occasionally in a patient who is in perfect health. Frequently nucleo-albumin and serum-albumin are both present, particularly in acute or subacute nephritis. Nucleo-albumin is rarely present in chronic nephritis. The presence of this substance alone does not ordinarily mean that there is a kidney lesion. Albumin in the urine is either excreted by the kidneys or comes from some part of the urinary passages. If it results from some localized irritation, inflammation or hemorrhage, there are more white cells present in the urinary sediment than in ordinary albuminuria. If there is hemorrhage, there are, of course, red cells. A small amount of albumin is found in cystitis, and a somewhat larger amount in pyelitis. The amount, however, is always small unless it comes directly from the kidney secreting substance. Urine containing a small quantity of sodium chlorid or other salts may show just a trace of serum-albumin, but if sodium chlorid is added to such urine, a larger deposit will be obtained. Frequently urine in which albumin has previously been found becomes free from this substance because the patient is passing a larger total amount of urine; in other words, if he has been given a diuretic or a large amount of water, albumin may not be found, while the same condition which caused the albuminuria still exists. Circulatory tonics, such as digitalis, provided the blood pressure is not high, frequently, temporarily at least, may cure an albuminuria.

1. The albuminuria of nephritis will be discussed later under that heading.

2. Accidental albuminuria may occur from several causes. It is sometimes due to exposure to cold; more frequently it is due to some dietary error, such as overloading the system with proteins; or it may be due to some alimentary disturbance. Traces of albumin are often found in the urine in intestinal disturbances, particularly in chronic diarrheal conditions. Albumin is often found in the urine without any assignable cause, probably owing to some focal infection. Mouth and throat infections may cause serious kidney disease; mild irritations, therefore, may cause the appearance of small amounts of albumin in the urine.

3. Incidental albuminuria is frequent. It may be caused by cold baths or cold showers. It may occur with menstruation or when menstruation is delayed. It occurs frequently after severe muscle strain, as in competitive athletics.

Incidental albuminuria as a symptom of an acute disease, and its appearance during the intensity of an acute infection have been proved. Backache and the primary symptoms of most acute infections are probably due to kidney congestion.

Cardiac weakness or insufficiency, low blood pressure, or anything which causes congestion of one or both kidneys may allow leakage of albumin. On the other hand, a small trace of albumin is frequently a symptom of hypertension, and may be the forerunner of actual kidney disease.

Albumin frequently appears in the urine following an operation, and is perhaps chiefly due to the anesthetic. It may, however, be due to some position in which the patient is compelled to sustain himself for an extended period of time, such as the lithotomy position; or sluggishness in the circulation of the kidneys may occur from prolonged lying on the back.

Renal irritations, or irritations in some part of the urinary tract, frequently cause the discharge of small amounts of albumin in the urine. A floating kidney may also be the cause of this condition.

When the cause of albuminuria has been determined, the preventive treatment is self-evident. If it is a part of some diseased condition, it will diminish with any improvement in that condition.

4. Orthostatic albuminuria (lordotic) has also been called the albuminuria of adolescence, because it is apt to occur in developing children. As it occurs only when the individual is active, it was for many years supposed to be entirely due to a change in the blood pressure of the kidney vessels, and was termed orthostatic albuminuria, as in the majority of instances the albumin disappeared from the urine if the child remained in bed. Occasionally the administration of cardiac tonics and vasopressor drugs improved or prevented the condition. This symptom disappeared in many of the children as they grew older, the duration of the condition varying. However, since Jehle published his monograph, in 1909, stating that so-called orthostatic and functional albuminuria was often due to lordosis causing passive hyperemia of the kidneys, the truth of his observations has been acknowledged by many investigators. It seems probable that some inherent weakness of the kidney circulation must also be a factor, though general vasomotor disturbances and low blood pressure have not been constantly present. Not every lordotic person is afflicted with albuminuria; nor is every orthostatic albuminuric lordotic. However, lordosis is apparently a frequent cause of albumin in the urine in an active patient.

Albuminuria due to lordosis may come from only one kidney, as has often been proved by ureteral catheterization. In schoolchildren it may be the result of sitting for some time daily with the hands folded behind the back.[56] Albuminuria may also be caused by a movable kidney, due to venous or passive congestion.

The term "orthostatic albuminuria" should be limited to that albuminuria without casts which occurs after standing or moving about, and which disappears with a reclining position. If casts and blood cells are associated with this condition, the patient may be suffering with nephritis. Hence position may be the final cause of sufficient passive congestion for the excretion of albumin, casts and blood cells. The necessity for complete rest, in even slight kidney congestion, is therefore obvious.

56. Piesen: Wien. klin. Wchnschr., Jan. 5, 1911.

Orthostatic albuminuria may be due not only to lordosis, which produces a passive congestion of otherwise normal kidneys, but also to an insufficiency of the kidney circulation, possibly congenital, with or without lordosis. This condition may also be caused by kidneys of insufficient size for the individual. Orthostatic albuminuria may also be caused by certain positions or labors which cause a profusion of blood to course to the kidneys, resulting in passive congestion and leakage of albumin. Sometimes in rapidly growing youths the kidneys may be insufficient, just as we find hearts insufficient. Later the kidneys grow to the body size.

Lordotic albuminuria or albuminuria due to disturbed circulation in otherwise normal kidneys usually occurs between the ages of 10 and 15. Scoliosis may also be a factor in causing albuminuria. Tall, thin children with poor circulation are most frequently affected. This insufficiency of circulation is evidenced by cold hands and feet, and general weariness after exercise. Functional or orthostatic albuminuria, or albuminuria occurring after hard exercise, may be due to a kidney which has imperfectly recovered from a previous inflammation. This kidney may be insufficient for years and become a predisposing cause of chronic nephritis.

The prognosis of this albuminuria of adolescence is generally favorable, although it usually shows a lack of kidney tone or imperfect function, and may indicate that the surrounding circulation is not perfect. Hence there is danger of serious disturbance later, particularly with any added strain on the kidneys.

In intermittent albuminuria, although casts may be absent, there is always the possibility of development into a condition of nephritis; consequently insurance companies look on these cases with suspicion. However, patients with intermittent, lordotic or orthostatic albuminuria not infrequently recover completely and permanently.

Before an albuminuria is considered a simple albumin leak, all suspicion of more serious conditions of the kidneys must be eliminated by examinations of the urine under varying conditions. Casts must be absent, and there must be no cardiac hypertrophy or other symptoms which would show that the kidneys are suffering from localized or general inflammation. If granular casts are found, the prognosis is not good, but may not be very bad. Determination of the absence of any focal infection, tests of function, blood examinations, and, if advisable, the passage of ureteral catheters to show whether both or only one kidney is at fault will make the prognosis clear.

The results of urine examined on first rising in the morning, and again in the latter part of the afternoon will quickly show whether the condition is an orthostatic albuminuria. Also, tests of diet and exercise will show the limitations of the kidneys and their ability to sustain effort without leaking albumin.

Temperature tests should be made, as it is not unusual to find that so-called functional or orthostatic albuminuria is due to the fact that a tuberculous kidney is developing. Such a condition may be discovered before pus or blood appears in the urine. The localization of an albumin leak in one kidney, with some rise of temperature in the evening, should cause not only the centrifuged sedimented urine to be examined for tubercle bacilli, but also the guinea-pig test to be made.

The spine should of course be examined for scoliosis and lordosis, and proper orthopedic treatment should be instituted if either of these conditions is found. Also, any faulty position assumed by the child while studying in school or at home, or such as results from lying in a hammock or sleeping in a bed with too weak springs, should be corrected.

Disturbed menstrual function in young girls is at times a factor in causing leakage of albumin. When normal menstruation occurs spontaneously or as the result of appropriate treatment, such albuminuria ceases.

That hard physical exercise may cause albumin and casts to appear in the urine is now too well known to require proof or discussion. That a repetition of this condition in athletes may cause no future harm will not be so readily accepted, though Jundell and Fries,[57] after repeatedly examining the urine of 163 athletes after exercise of various kinds, concluded that the kidneys are never permanently injured. They did not, however, take into consideration the more or less permanently increased blood pressure caused by such exercise. It would seem only logical to believe that albuminuria caused by athletics represents kidney tire or kidney strain, making these organs more susceptible to irritation, and must be as harmful as over-indulgence in improper food, frequent diarrhea, repeated attacks of rapid heart from coffee or other cause, periods of insomnia, etc.

In the treatment of such recurrent albuminuria or in the treatment of lordotic albuminuria, strenuous exercise should be forbidden, and all functions of the body should be made as perfect as possible. The diet should be properly arranged; a great deal of rest taken; muscle exercises to increase the strength of the back muscles advised; anemia treated by the administration of iron; a weak heart aided by cardiac tonics; constipation relieved; plenty of fresh air prescribed; and sea bathing and cold bathing usually prohibited—every means being used to improve the general condition of the patient.

Of course it should be recognized that traces of albumin may be caused by renal concretions. A growing child or youth with traces of albumin in the urine, and with low blood pressure may develop pulmonary tuberculosis.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

FORMIN (See N. N. R., 1916, p. 138).

The following dosage forms have been accepted:

Formin Tablets, 5 grains.—Each tablet contains formin 5 grains.
Formin Tablets, 7½ grains.—Each tablet contains formin 7½ grains.

VERONAL (See N. N. R., 1916, p. 92).

The following dosage form has been accepted:

Veronal Tablets, 5 grains.—Each tablet contains veronal 5 grains.
Prepared by E. Merck, Darmstadt, Germany (Merck and Co., New York).

57. Jundell and Fries: Nord. med. Ark., 1911, **44**, Internal Medicine, No. 1.

A Comparison.—If consumption was as unpopular as the diseases of pigs or the bollworm, it would soon be eradicated—but as long as the price of humanity is so low and pork and cotton so high, we will have to do the best we may.—*Bulletin*, Newark (N. J.) Department of Health.

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SATURDAY, JANUARY 6, 1917

A STUDY OF CROSSED TOLERANCE FOR DRUGS

The expression "crossed tolerance" has been employed to designate the altered susceptibility which subjects that have acquired a considerable degree of tolerance for one drug or poison may thereafter exhibit toward another potent substance. In certain instances this phenomenon is well recognized. A habitual drunkard, tolerant to large doses of alcohol, usually is noticeably resistant to the general anesthetics. It is not difficult to understand the occurrence of crossed tolerance in the case of drugs very closely related which act in essentially similar ways on the organism; but as the mechanism of habituation and increased resistance to drugs is little understood in all but a few instances, the more extreme alleged types of crossed tolerance that have been reported have not been subjected to critical consideration. To what extent, aside from a few familiar examples, functional habituation, acquired for a particular drug, may also hold for other drugs of somewhat similar action has remained to be determined.

Dr. H. B. Myers,[1] the pharmacologist of the Medical School of the University of Oregon, thus indicates some of the problems in this field: The pharmacologic action of ether on the central nervous system may be considered to be similar to that of alcohol, since the two act on the same nerve cells in the same direction, and neither has a selective action not shared by the other. The pharmacologic similarity, together with the close chemical relationship, would lead one to assume, even in the absence of known facts, that the toleration of alcohol and ether was mutual. Similarly a crossed tolerance between chloroform and the closely related chloral hydrate might be assumed. With other drugs, however, which may be grouped together because of some ultimate general effect produced, as, for example, sleep, the assumption of a cross tolerance is not so well warranted, nor are facts available to show whether such cross tolerance does occur.

Myers[1] has attempted to ascertain whether crossed toleration can be established, first, between such closely related drugs as morphin and methyl and diacetyl morphin, and second, between morphin and other less related depressants of the central nervous system to which the cells become tolerant, as cannabis indica and chloral hydrate. Cannabis indica represents drugs not chemically related but sharing in some of the selective actions of morphin; chloral hydrate such depressants as have neither chemical relationship nor selective actions in common.

The outcome of these new experiments indicates that a marked crossed tolerance exists to codein and to heroin in dogs habituated to morphin, so far as effects on the respiratory center are concerned. A slight crossed tolerance exists between codein and morphin, and between heroin and morphin in regard to their actions on the tissues governing equilibrium. No evidence of crossed toleration to cannabis indica or to chloral hydrate exists in dogs tolerant to large amounts of morphin.

It thus appears that a crossed tolerance may exist between closely related drugs, but that this tolerance is evidenced only on those functions in which the drugs have a common selective action. The results are in harmony with the older belief in the increased resistance of chronic drunkards, in comparison with ordinary persons, to chloroform. Alcohol and chloroform act on the same nerve cells in a similar way, and probably induce the same changes in the protoplasm. From Myers' study we may conclude that a crossed tolerance involves only those structures on which the drugs exert effects mutually alike.

1. Myers, H. B.: Cross Tolerance: Altered Susceptibility to Codein, Heroin, Cannabis Indica and Chloral Hydrate in Dogs Having an Acquired Tolerance for Morphine, Jour. Pharmacol. and Exper. Therap., 1916, **8**, 417.

COLD AIR AND PNEUMONIA IN CHILDHOOD

In a presidential address before the American Pediatric Society at Washington a few months ago, Freeman said:

> In all the acute infectious diseases I think there is now a general acceptance of the advantage of fresh air, excepting perhaps in measles and scarlet fever. In tuberculosis there is now no question of its advantage. In pneumonia the results from this treatment have exceeded those from any other method of treatment, including specific treatment with serums and vaccines. There are still many men, however, who, while allowing that fresh air is beneficial in an inflammation of the lung, doubt its efficacy in bronchitis, pharyngitis, laryngitis, rhinitis and otitis. The only reason why such men doubt its efficacy is because they have not sufficiently tried it. I have used it in all these conditions and I believe that it is of direct benefit and that it diminishes materially the mortality.[1]

Freeman remarks that the supposed production of catarrhal inflammations in adults by exposure to cold air, if it really exists, exists only on account of suggestion. The persons affected have been brought up in

1. Freeman, R. G.: Fresh Air in Pediatric Practice, Am. Jour. Dis. Child., December, 1916, p. 590.

such fear of fresh air that every infection of the upper air passages to which they succumb is attributed to it. Nevertheless, several recent investigations have indicated that we cannot be entirely indifferent to the possible effects of chilling on the organism. Studies of the New York State Commission on Ventilation have indicated that respiratory infections of rabbits with *Bacillus bovisepticum* (snuffles) are favored by the chilling of such animals after they have been accustomed to heat, and some of the results indicate that a change from a low to a high external temperature also predisposes to similar infection. Although Chodounsky[2] obtained only negative results, the weight of recent experimental evidence favors the view that exposure of the body to cold is favorable to the incidence of acute respiratory disease, and it seems not improbable that the primary seat of this deleterious influence is in the mucous membrane of the upper air passages.[3]

Considerations of the foregoing sort throw a greater burden of proof on the advocates of any extreme cold air therapy. It would be unjust to the commendable advocacy of outdoor life to identify this with chilling from undue exposure. Nevertheless, open air treatment always harbors possibilities of even unintentional exposure, which becomes particularly serious to those who, like infants, are least able to make known any undue discomfort produced by their environment. The cold air treatment of pneumonias in childhood, endorsed by Northrup about ten years ago,[4] was given a scientific basis by the contentions of Howland and Hoobler.[5] They asserted that children seriously ill with pneumonia might have a blood pressure somewhat below that expected at their age, and that the symptoms accompanying fatality in this disease were those of vasomotor failure. They found that the effect of cold fresh air on patients with active pneumonia was the production of a rise in blood pressure; removal to a warm (65 F.) room produced a fall in blood pressure. The results were absent or much less striking in convalescents. No results were obtained by placing children outdoors in warm weather. They concluded, therefore, that the all important factor in the outdoor treatment was cold, and that the rise in blood pressure was brought about by a reflex stimulation of the vasomotor center through the action of the cold air on the skin. They also stated that a constant and continuous increase in an abnormally low blood pressure, brought about without exhaustion or bad effects, is of the greatest value. This explanation of the beneficial effects of the outdoor treatment was generally accepted.

It has been pointed out recently in THE JOURNAL[6] that, contrary to the usual belief, the blood pressure and the vasoreflex are not as a rule seriously impaired in pneumonia. Morse and Hassman[7] have made a special study of the effect of cold outdoor air on the blood pressure in pneumonia in childhood at the Children's Hospital in Boston. From their statistics there appears to be no constant relation between the systolic pressure, the diastolic pressure or the pressure pulse and the severity of the pneumonia or the temperature of the surrounding air, as the rates of both the pulse and the respiration show a tendency to vary directly with the temperature of the surrounding air.

We are apparently not justified at present in formulating conclusions as to the effect of the cold air treatment on the mortality of pneumonia in childhood. Patients, however, symptomatically seem more comfortable when they are outdoors than when they are in the house. At any rate, the impression of those constantly with the patients was that, in general, the children were more comfortable outdoors than in the ward; they coughed less, were quieter, had a better color, and had better appetites outdoors than indoors. These were merely impressions, however, and, as Morse and Hassman admit, are of little or no scientific value.

DEATHS OF PHYSICIANS IN 1916

During 1916 the deaths of 2,196 physicians in the United States and Canada were noted in THE JOURNAL. On an estimate of 158,000 physicians, this is equivalent to an annual death rate of 14.08 per thousand. For the fourteen previous years the mortality rates were: 1915, 15.71; 1914, 14.41; 1913, 14.64; 1912, 14.13; 1911, 15.32; 1910, 16.96; 1909, 16.26; 1908, 17.39; 1907, 16.01; 1906, 17.20; 1905, 16.36; 1904, 17.14; 1903, 13.73, and 1902, 14.74. The average annual mortality for the period from 1902 to 1916, inclusive, was, therefore, 15.61 per thousand.

The chief death causes in the order named were senility, heart disease, pneumonia, cerebral hemorrhage, accident, surgical operations and nephritis. The age at death varied from 23 to 99, with an average of 59 years, 11 months, 5 days. The general average of age at death since 1904 is 59 years, 8 months and 13 days. The number of years of practice varied from 1 to 77 years, the average being 33 years, 2 months and 21 days. The average for the past thirteen years is 31 years and 29 days.

Causes of Death.—There were 225 deaths assigned to general diseases; 261 to diseases of the nervous system; 324 to diseases of the circulatory system; 231 to diseases of the respiratory system; 129 to diseases of

2. Chodounsky: Erkältung und Erkältungskrankheiten, Vienna, 1907.
3. Lee, F. S.: Recent Progress in Our Knowledge of the Physiological Action of Atmospheric Conditions, Science, 1916, **44**, 183.
4. Northrup, W. P.: Med. News, 1904, **84**, 823; Chicago Med. Recorder, 1904, **26**, 628; Med. Rec., New York, 1905, **67**, 253; Boston Med. and Surg. Jour., 1906, **154**, 216; THE JOURNAL A. M. A., Oct. 13, 1906, p. 1182; Med. Jour., New York, 1907, **86**, 12.
5. Howland, John, and Hoobler, B. R.: The Effect of Cold Fresh Air on the Blood Pressure in Pneumonia of Children, Am. Jour. Dis. Child., May, 1912, p. 294.
6. The Blood Pressure in Pneumonia, Current Comment, THE JOURNAL A. M. A., Oct. 14, 1916, p. 1168; The Respiratory Mechanism in Pneumonia, Dec. 2, 1916, p. 1678.
7. Morse, J. L., and Hassman, D. M.: The Effect of Cold Air on the Blood Pressure in Pneumonia in Childhood, Am. Jour. Dis. Child., November, 1916, p. 445.

the digestive system; 105 to diseases of the genito-urinary system; 337 to senility; 39 to suicide; 112 to accident; 15 to homicide, and 98 after surgical operations. Among the principal assigned causes of death are senility, 337; heart disease, 215; pneumonia, 208; cerebral hemorrhage, 204; accident, 112; operations, 98; nephritis, 72; tuberculosis, 62; carcinoma, 49; appendicitis, 40; suicide, 39; arteriosclerosis, 36; diabetes, 29; angina pectoris, 26; septicemia, 21; uremia, 17; myocarditis, 16; homicide, 15; endocarditis, 14; gastritis and cirrhosis of the liver, each 13; influenza, anemia and cholecystitis, each 12; typhoid fever, 11; gastric ulcer, 10; general paralysis of the insane and paresis, each 9; paralysis, 8; dilatation of the heart, intestinal obstruction and peritonitis, each 7; erysipelas and meningitis, each 6; embolism and disease of the prostate, each 5; typhus fever, sarcoma, pleurisy, asthma and ptomain poisoning, each 4; diphtheria, pericarditis and bronchitis, each 3; malaria, drug addiction, neuritis, anterior poliomyelitis, mastoid disease, duodenal ulcer and dropsy, each 2, and scarlet fever, bubonic plague, yellow fever, epithelioma, Addison's disease, leukemia, alcoholism, tabes dorsalis, Hodgkin's disease, paralysis agitans, Pott's disease, paratyphoid fever, trypanosomiasis, pancreatitis and tumor of the esophagus, each 1. One physician died in prison. Ten medical officers lost their lives from wounds received in the European, Asiatic and colonial war zones.

The causes assigned for the 112 deaths from accidents were: automobile, 28; falls, 18; railway-automobile (grade crossing), 17; railway, 11; drowning, 11; firearms, 7; poisons and burns, each 5; sunstroke, starvation and exposure, and explosions, each 2, and Roentgen-ray burns, crushing and street railway, each 1. The 59 physicians who ended their lives by suicide selected the following methods: firearms, 24; poison, 7; hanging, 3; cutting instruments, 2, and other means, 3. Of the 15 homicides, 13 were due to firearms; 1 to cutting instruments, and in 1 the method was not reported.

Ages.—Of the decedents, 62 were between the ages of 21 and 30; 194 between the ages of 31 and 40; 343 between 41 and 50; 438 between 51 and 60; 499 between 61 and 70; 386 between 71 and 80; 159 between 81 and 90, and 19 between 91 and 99. The greatest mortality occurred at the age of 64, when 68 deaths were recorded.

Military Service.—During the year 221 physicians died who had served in the Civil War, and of these 54 had followed the fortunes of the Confederacy; 45 had been medical officers of United States Volunteers. The Medical Corps of the Army lost 8 officers; 7 had been members of the Medical Reserve Corps, and 17 had been contract or acting assistant surgeons. The Navy lost 13 medical officers; the Public Health Service 10 officers; the Indian service 3 physicians, and the organized militia 45 medical officers, of whom 6 had attained the grade of surgeon general.

Civil Positions.—Of those who died, two had been United States senators; one a member of Congress; one, governor of a state; 6, United States consuls; 13, members of state senates; 32, members of the lower houses of legislatures; 28 had been mayors; 33, aldermen; 33 had served as justices of the peace, as clerks in the government service or in various other civil positions; 7 had been postmasters; 16, editors of medical or lay journals; 27 had also been clergymen, of whom ten were foreign missionaries; 4 had been attorneys; 92, druggists; 40, bankers; 15, medical directors of life insurance companies; 5, dentists; 1, a president of a railway company; 1, a botanist; 1, a musician; 1, a toxicologist, and 8, chemists.

Association Fellowship.—Of the 596 Fellows of the American Medical Association who died during 1916, seven had been members of the House of Delegates; one, Dr. H. L. E. Johnson, had been a member of the Committee on National Legislation; one, Dr. Henry B. Favill, was chairman of the Council on Health and Public Instruction; five, Drs. Wisner E. Townsend, Frank J. Lutz, William L. Rodman, Philip Mills Jones and H. L. E. Johnson, had been members of the Board of Trustees, and two, Drs. William L. Rodman and John B. Murphy, had served as President of the Association.

THE REFINEMENT AND CONCENTRATION OF DIPHTHERIA ANTITOXIC SERUMS

The introduction of a practical method for the concentration and refinement of diphtheria antitoxin, devised by Gibson[1] in 1905, marked an important step in advance from a therapeutic standpoint. It represented the applications of the experiences of protein chemistry to a problem which is essentially of a biochemical character. It consisted in removing a globulin fraction from the serum or plasma and subjecting it to purification by precipitation, solution and dialysis. The antitoxic properties of horse serum followed the globulin at every step. The expression "antitoxic globulins" thus came into prominence.

It had previously been maintained that the artificial concentration of antitoxin is superfluous because it is possible to immunize animals to such a high degree that any further procedure is unnecessary. The production of such highly potent serums, however, is attended with much uncertainty and is sometimes exceedingly expensive. With the introduction of concentration schemes, citrated plasma could be used instead of serum in the preparation of antitoxic fluids. Coagulation is prevented by the citrate — the corpuscles sediment — and the yield of productive plasma is often 50 per cent. greater than that of serum obtained by spontaneous clotting of blood. Not only has the plan of "concentrating" antitoxin by the methods of protein fractionation permitted the satis-

1. Gibson, R. B.: The Concentration of Antitoxin for Therapeutic Use, Jour. Biol. Chem., 1905-1906, **1**, 161.

factory use of low grade serum or plasma which would otherwise have been of little value, but it has also established the possibility of eliminating some of the undesirable effects, for example, serum rashes, attending serum injections, by removing by-products presumably responsible for them. Finally, a smaller volume of fluid is required for injection.

From time to time improvements have been made in the preparation of antitoxic protein fractions of the blood of immunized animals, usually based on the separation of the blood proteins in accord with the principles just discussed. Urticaria has been reduced in frequency but by no means completely excluded. The most recent process was planned by Heinemann[2] at the Serum Division of the Memorial Institute for Infectious Diseases, Chicago. It involves a combination of well known methods of precipitation and heating protein solutions, with a persistent repetition of certain details, until the desired results are obtained. The precise directions, recently published, show that 2,000-unit serum may be produced from plasma testing less than 300 units. The apparent stability of the new serum renders it of especial economic value, and a concentrated fluid containing from 18 to 20 per cent. of active solids can readily be prepared. The higher concentration attainable in comparison with earlier methods is attributed to the more successful removal of nonantitoxic blood proteins. The serum disease reactions are reported to be greatly reduced by the use of this new-process antitoxin.

We ought to derive a peculiar satisfaction from such reports of progress. Not only does this process represent an advance of direct applicability in clinical medicine — it exemplifies the best spirit of scientific endeavor. There have been no "secrets" and no veiling of the truth, no patents asked for, and no commercialization in the evolution of the essential methods for producing better antitoxin to combat diphtheria. The researches have been published clearly as a gift to all who would use the findings. We hear all too little about beneficent scientific philanthropy of this character.

2. Heinemann, P. G.: The Refinement and Concentration of Antitoxins, Jour. Infect. Dis., 1916, **19**, 433.

The Medical Curriculum.—With the best possible preparation the medical student finds his daily task quite as much as the strong can carry, and altogether too heavy for the weakling. There has been some discussion among medical educators concerning the curriculum, some contending that it is too heavy for the average student. This depends on what is meant by the "average student." If the standard set in college work is applied, I am of the opinion that medicine does not want such "average students." I am convinced that a strong student, of high average, can carry the medical work as now imposed, and that the imposition of a heavy task succeeds in weeding out the unfit and is therefore desirable. We do not develop muscles by lifting feather weights, nor do we strengthen brain activity without earnest effort. The aim of medical education is to develop strong men, and in order to do so difficult tasks must be imposed in the training.—Victor C. Vaughan, M.D., *Science*, Dec. 8, 1916.

Current Comment

TUMOR CHEMISTRY

From time to time attempts have been made to discover possible chemical differences between the cells of tumors and those of corresponding normal tissues. A review of the literature on the subject leaves the impression that if any differences exist they are not sufficiently marked to deserve emphasis.[1] Not long ago, however, analyses of malignant tumor tissue by Kocher[2] indicated that this yields a larger proportion of the familiar diamino acid derivatives of the proteins than is found in normal tissues. Taken in connection with the demonstrated rôle of some of the diamino acids, notably lysin, in growth,[3] these facts seemed to offer a new approach to the cancer problem. The high content of the diamino acids in the tumors might be looked on as in some way responsible for the abnormal rate of growth of these tissues. Drummond,[4] of the Cancer Hospital Research Institute, London, has made new analyses of neoplasms which could be controlled experimentally. These furnish a different interpretation to the findings just mentioned. The distribution of nitrogen in a large number of the proteins of human and chicken tumors and normal tissues has been examined. A higher proportion of the diamino acids generally exists in the case of the tumor proteins. It has been shown that in all probability the diamino acid content of a tissue varies directly with the amount of nuclear material present. The more rapidly growing and cellular tumors, therefore, show a higher percentage of these substances than do the slowly growing ones. As Drummond contends, all the evidence points to the conclusion that the higher percentage of diamino acids which is often present in the proteins of malignant growths is due to the greater proportion of nuclear material which they contain; for similarly high figures for this fraction of the protein molecule are found in the analysis of those normal tissues which possess cells rich in nucleoprotein, as, for example, normal human pancreas and spleen. A different explanation of the increased rate of cell division must still be sought.

IS PELLAGRA TRANSMISSIBLE?

After reviewing the available evidence of the Robert M. Thompson Pellagra Commission regarding the nature of the etiologic factor in pellagra, Vedder[5] wrote in 1914:

I regard the question as to whether pellagra is an infection or a deficiency disease to be entirely open. It does not appear to me that any evidence that can be regarded as proof of either hypothesis has yet been presented. It is rather a question of weighing the evidence and determining toward which hypothesis the bulk of the evidence points.

1. Wells, H. G.: Chemical Pathology, 1914, p. 449.
2. Kocher, R. A.: The Hexone Bases of Malignant Tumors, Jour. Biol. Chem., 1915, **22**, 295.
3. Compare Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1912, **12**, 473; **13**, 233; 1914, **17**, 325.
4. Drummond, J. C.: A Study of the Distribution of Nitrogen in the Proteins of Tumours and Normal Tissues, Biochem. Jour., 1916, **10**, 473.
5. Vedder, E. B.: Dietary Deficiency as the Etiological Factor in Pellagra, Arch. Int. Med., August, 1916, p. 137.

The commission has been inclined to believe rather strongly that it points to the infectious origin of the disease. It seems to me that so far as I have examined it the evidence points at least as strongly toward a dietary deficiency.

Vedder's conclusions were evidently dictated by the similarity between pellagra and other known deficiency diseases, notably beriberi and scurvy. Much of the evidence that has been presented as proof of the infectious nature of pellagra can be reasonably explained in accordance with a deficiency hypothesis. Since then, Goldberger's studies on the causation and mode of preventing pellagra have added evidence to the belief that this disease rests on some dietary defect, and that relief can be brought about by changing the food of the patients.[6] His work is in harmony with the earlier failure of Lavinder and Francis[7] and others of the U. S. Public Health Service to transmit pellagra to monkeys by inoculation of material from pellagrous lesions. To this may now be added the recently reported experimental attempts at transmission of pellagra to the human subject.[8] Sixteen volunteers, mostly members of the Public Health Service, were subjected to procedures intended to afford evidence of the communicability of pellagra, in case this was of an infectious nature. The materials used were blood, nasopharyngeal secretions, epidermal scales from pellagrous lesions, urine and feces. Blood was administered by intramuscular or subcutaneous injection; secretions by application to the mucosa of the nose and nasopharynx; scales and excreta by mouth. Both urine and feces were ingested by fifteen of the volunteers, five of whom also took blood, secretions and scales. The experiments were performed at four widely separated localities (Washington, D. C.; Columbia, S. C., Spartanburg, S. C., and New Orleans), at which different groups of the volunteers were assembled. As none of the subjects, during a period of between five and seven months, have developed evidence justifying a diagnosis of pellagra, no support is lent to the belief, still widely held, that pellagra is a communicable disease. The epidemiologic features are not incompatible with either hypothesis as to etiology.

THE EFFECT OF CHRONIC LEAD POISONING IN THE GERM CELLS OF THE MALE

The effect on the offspring of lead poisoning in the father has long been suspected from statistics on the probability of harmful effects from paternal plumbism in man on the germ cells.[9] The suspicions have been justified by the experimental studies of Cole and Bachhuber[10] at the University of Wisconsin, and of Weller[11] at the University of Michigan. The results of paternal lead poisoning are not manifested in sterility or stillbirths, but they are exhibited in the offspring by a reduction of approximately 20 per cent. in the average birth weight, by an increased number of deaths in the first week of life, and by a general retardation in development such that the offspring of lead-poisoned males often remain permanently underweight. One naturally inquires whether the spermatozoa of lead-poisoned males show any detectable changes associated with lead blastophthoria. The testes of such individuals have now been examined in sufficient numbers by Weller[12] to permit the statement that in the majority of cases no histologic differences can be detected between the testes of lead-poisoned subjects and those of normal controls. Spermatogenesis appears to take place along normal lines and at a rate which seems not unlike that in normal individuals. This observation is in no degree incompatible with a state of true blastophthoria, since it is to be expected that, if fertilization takes place at all, the spermatozoa will show no great variation from the normal as far as their appearance is concerned. The reason for the inferiority of the offspring is to be sought rather in qualitative changes in the germ plasm. In a limited group of instances, in which the male animal became sterile during the administration of lead, histologic examination of the testes showed complete aspermatogenesis with marked atrophy and vacuolar degeneration of the germinal epithelium.

THE SEARCH FOR THE IDEAL ANTISEPTIC

The ideal antiseptic procedure obviously would be one which would destroy the infecting micro-organisms but leave undamaged the body cells with which it might come into contact. The quest for such a substance has continued with enthusiasm almost since the time of Koch's fundamental researches on chemical disinfectants published thirty-five years ago. The substances proposed during this period have been legion. They represent the most diverse types of chemical compounds, acting by a variety of reactions, but all resulting in a damage to the bacterial body, whether it be by rapid oxidation, by coagulation of the protoplasm, by dehydration, by chemical combination or by some more subtle process. The living body is a structure of living cells comparable in many respects with the inimical micro-organisms. The tissue cells, therefore, are likely to experience as much damage from efficient antiseptics as do the invading bacteria. Experience teaches what considerations of comparative biology lead one to expect, that in infected wounds, for example, the antiseptic must often be applied in such strength that body cells as well as bacteria are injured or destroyed. Nevertheless the search for the ideal has continued in the hope, often seemingly useless and unjustified, of ultimately finding some discriminating agent suitable for bacterial destruction. After all, the tissue cells are not identical with the

6. Goldberger, Joseph: Pellagra: Causation and a Method of Prevention, THE JOURNAL A. M. A., Feb. 12, 1916, p. 471; Goldberger, Joseph, and Wheeler, G. A.: Experimental Pellagra in the Human Subject, Pub. Health Rep., Nov. 12, 1915. Observations on the Chemical Symptoms of Pellagra, editorial, THE JOURNAL A. M. A., April 22, 1916, p. 1311; Pellagra in Nashville, May 27, 1916, p. 1704.

7. Lavinder, C. H.; Francis, Edward; Grim, R. M., and Lorenz, W. F.: Attempts to Transmit Pellagra to Monkeys, THE JOURNAL A. M. A., Sept. 26, 1914, p. 1093.

8. Goldberger, Joseph: The Transmissibility of Pellagra, Pub. Health Rep., 1916, **31**, 3159.

9. The Effect on the Offspring of Lead Poisoning in the Father, editorial, THE JOURNAL A. M. A., Dec. 25, 1915, p. 2242.

10. Cole and Bachhuber: Proc. Soc. Exper. and Med., 1914, **12**, 24.

11. Weller, C. V.: Jour. Med. Research, 1915, **33**, 271.

12. Weller, C. V.: Histological Study of the Testes of Guinea-Pigs Showing Lead Blastophthoria, Proc. Soc. Exper. Biol. and Med., 1916, **14**, 14

lowest forms of microbiotic structure, or entirely analogous to them. One technical difficulty in the planning of investigations has been the lack of suitable isolated body cells which could be observed with respect to the possible effects of antiseptics. This has been overcome, however, by the use of so-called tissue cultures in which the growth of isolated connective tissue cells can now easily be watched in the laboratory. In this way R. A. Lambert[1] has followed the effect of the same chemical agents on bacteria and tissue cells growing together in vitro. Some estimate of the comparative resistance of body tissues to various antiseptic chemicals should thus be gained. It is apparent from his study that in the case of the chemical substances tested, such as potassium cyanid, phenol (carbolic acid), tricresol, hydrogen dioxid and alcohol, tissue cells were definitely more easily killed than were bacteria. With certain other disinfectants the difference was not so striking. Iodin stands out as the one chemical tested to which cells were found more resistant than were staphylococci. A good growth of cells was seen after exposure to a 1:2,000 solution of iodin for an hour, a strength sufficient to sterilize the tissue completely in most instances. Lambert points to his experiments as further evidence of the widely accepted value of iodin as an antiseptic. They indicate that, at least in weak aqueous solution, it should not, as is often stated, injure or irritate the tissues. Lambert is careful to point out, however, that iodin has the power of rapidly dissolving fibrin. Ordinarily the union of wound surfaces by the fibrin facilitates healing. The use of fibrin-dissolving, but tissue-conserving solutions raises a debatable theoretical question which application in practice can perhaps best decide.

1. Lambert, R. A.: The Comparative Resistance of Bacteria and Human Tissue Cells to Certain Common Antiseptics, Jour. Exper. Med., 1916, **24**, 683.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Drs. Dee C. Lee, Rolland F. Darnall and Patrick Murphy have resigned as members of the staff of the State Hospital for Nervous Diseases, Little Rock.——Dr. Robert E. Corney, Little Rock, has been appointed physician to the Tucker Convict Farm.

Hospital Activities.—The executive committee of the campaign for raising funds for the proposed new City Hospital, Little Rock, announces that it will start a campaign to raise $50,000, which will bring the fund to the desired figure of $200,000.——The legislature will be asked to appropriate $187,000 for the work against tuberculosis and for the maintenance of the State Tuberculosis Sanatorium, Booneville, during the next biennium. One of the principal improvements suggested is the erection of a building for negroes suffering from tuberculosis, and $5,000 for a children's building.

CALIFORNIA

Personal.—The resignation of Dr. Joseph Henry Catton, San Francisco, as assistant in medicine on the faculty of the University of California, was accepted by the regents at their last meeting.

Supreme Court to Decide.—It is reported that P. L. Crane, a chiropractor, is attempting to have the California medical law declared unconstitutional on the grounds that it exempts one group of practitioners—Christian Scientists—but requires chiropractors to pass an examination. The case has been appealed to the United States Supreme Court after having been suspended three different times by the United States District Court.

Lectures at Stanford Medical School.—A course of popular medical lectures will be given at the Stanford University Medical School, San Francisco, during January, February and March. The program for January is as follows:

January 12, "What Every One Should Know About Cancer." Dr. Harry M. Sherman, representing the American Society for the Control of Cancer.

January 26, "Modern Efforts to Secure Painless Childbirth." Dr. Frank W. Lynch, Professor of Obstetrics and Gynecology, University of California.

CONNECTICUT

Smallpox.—Waterbury had reported 104 cases of smallpox up to December 19. Compulsory vaccination is being enforced. Dr. John T. Black, secretary of the state board of health, is in Waterbury, and has assumed active charge of the situation.

State Health Association Organized.—At a largely attended meeting of the health officers, medical men and others interested in public health, held at the Chamber of Commerce in New Haven, December 6, the Connecticut Public Health Association was organized, and Dr. Stephen J. Maher, New Haven, was elected president.

Personal.—Dr. John W. Churchman, New Haven, who has been on duty at Bar le Duc, France, for several months, has arrived home, and expects to return to his work on the Western war front in March.——Dr. Walter H. Brown has been placed in charge of the health department of Bridgeport. He will reorganize the department and establish a department of vital statistics.——Dr. James E. Hair, Bridgeport, has been injured in an automobile accident.

DISTRICT OF COLUMBIA

Medical Society Elects Officers.—Officers for 1917 have been elected by the Medical Society of the District of Columbia as follows: president, Dr. G. Wythe Cook; vice presidents, Drs. Charles M. Beall and Milton H. Prosperi; recording secretary, Dr. Henry C. Macatee; corresponding secretary, Dr. J. Lawn Thompson, and treasurer, Dr. Charles W. Franzoni.

Medical Committee for Inauguration Day.—To safeguard the crowds that will be in Washington to view the parade and take part in other ceremonies attendant on the inauguration of President Wilson on March 5, next, 140 of the city's physicians have been organized into a medical committee, of which Dr. Phillip S. Roy is chairman, and Dr. William P. Carr, vice chairman.

Novel Suit for Damages.—A Washington physician and a hospital are named as defendants in a novel suit recently filed. The basis of the suit is the quarantining of a rooming house kept by the plaintiffs, in August last, on account of smallpox. A roomer, it is alleged, was taken sick and by direction of the physician was taken to the hospital for treatment. After remaining in the hospital four or five days the patient was returned to the rooming house and the case reported to the health officer as possibly smallpox. Investigation confirmed the physician's suspicions, and the patient was taken to the smallpox hospital and the rooming house quarantined. The plaintiffs allege that the physician and the proper authorities at the hospital should have known that the patient had smallpox, that the patient was returned to their rooming house without notice to them of the probable nature of his disease, and that they have suffered damage as the result.

GEORGIA

New Medical Societies Organized.—Physicians of the second district met in Thomasville, December 14, and organized the Second District Medical Association, electing Dr. Everett Daniel, Moultrie, president; Dr. William J. Jennings, Thomasville, vice president, and Dr. Erie J. Newsom, Camilla, secretary-treasurer. The first regular meeting of the association will be held in Moultrie, in February.——Physicians of Colquitt County met at Moultrie, December 21, and organized the Colquitt County Medical Society, electing Dr. William L. Jerkins, president; Dr. J. A. Summerlin, Hartsfield, vice president, and Dr. William W. Massey, Moultrie, secretary-

treasurer. The first regular meeting will be held at Moultrie, February 12.

New Officers.—Georgia Medical Society, of Savannah, December 12: president, Dr. Antonio J. Waring; vice president, Dr. James O. Baker, and secretary-treasurer, Dr. William H. Myers, all of Savannah.——Eleventh District Medical Society, at Valdosta: president, Dr. Quitman Holton, Douglas; vice president, Dr. John W. Simmons, Brunswick; secretary-treasurer, Dr. Frank Bird, Valdosta; and councilors, Drs. Robert C. Woodward, Adel, and Henry C. Welchel, Douglas. Waycross was selected as the next meeting place.——Third District Medical Association, at its semiannual meeting, at Cordele: president, Dr. Thomas J. McArthur, Cordele; vice president, Dr. Joseph T. Stukes, Americus, and secretary, Dr. Charles A. Greer, Oglethorpe. Americus was selected as the next place of meeting.

ILLINOIS

Paris Protects Against Smallpox.—Mayor Hoff of Paris issued an order, December 26, that every one coming into Paris from Terre Haute, Ind., where smallpox exists, should be vaccinated.

Sanitary Survey of Quincy.—The city council of Quincy has invited the U. S. Public Health Service to conduct a sanitary survey of Quincy in cooperation with the state board of health.

Vote on Sanatorium Declared Illegal.—Attorney General Lucey is said to have decided that the special election held in Aurora last month, in which the supervisoors of Kane County were authorized to appropriate money for a tuberculosis sanatorium, was illegal, because of incorrect wording of the ballot.

Personal.—Dr. Marguerite D. Mitchell Macdougall, Aurora, was found semiconscious, almost frozen, and seriously injured in the rear of her home, in Aurora, December 31. She states that she slipped and fell from the window, but her husband is reported to be in jail in Aurora charged with assault with intent to kill.

Health News.—The November number of *Health News*, the official monthly bulletin of the Illinois State Board of Health, is devoted chiefly to poliomyelitis, one paper being on the orthopedic after-care of paralysis victims, another on the diagnosis, which is a thorough presentation of the subject, and a third on recent developments in poliomyelitis, which presents some general considerations of the subject in an interesting manner.

Vaccination Ruling Upheld.—The campaign of the Illinois State Board of Health to exclude unvaccinated children from schools, during an epidemic of smallpox, has been upheld by a decision of Master in Chancery E. H. Marsh of Rockford. An injunction had been asked against the Rockford Board of Education, which had directed the exclusion from schools of unvaccinated children, as required by the ordinance. The master in chancery held that the ordinance was valid and refused to grant the injunction.

Contagious Disease Hospital.—The city council finance committee, on December 29, authorized Health Commissioner Robertson to make habitable the new contagious disease hospital and appropriated $10,000 for this purpose. The building has been completed since November 28, but no appropriation had been available for its equipment. It is reported that the hospital will be ready to receive patients, January 8. It is probable that the hospital will be known as the Alfred C. Cotton Hospital.——At a meeting of the Chicago Woman's Club, December 31, addresses were made by Health Commissioner Robertson, Drs. Willis O. Nance, William R. Cubbins, William K. Murray, Daniel A. K. Steele, William A. Noble and A. Augustus O'Neil, and it was voted to cooperate with the health department in protecting the children of the city from contagious diseases.

Venereal Disease Prevention.—At a meeting held December 14, at the City Club, under the auspices of the American Social Hygiene Association, a movement was inaugurated to rid Chicago of social disease. The crusade is to be based purely on scientific principles and will be begun when a committee of volunteer social workers and physicians has been formed. Clinics will be established in various sections of Chicago.——Favorable action on an ordinance providing for reporting of venereal diseases without the name of the patient being disclosed was advocated before the city council committee on health, December 26, by Rev. John P. Brushingham, secretary of the morals committee. Addresses in favor of the ordinance were made by Drs. Roy R. Ferguson, Hugo E. Betz, James A. Clark, Eugene H. Wunderlich and Prof. Herbert L. Willett.

Chicago

Hospital to Be Reopened.—A meeting to consider plans for the reopening of Maimonides Hospital was held at the Hebrew Institute, December 12, and Drs. Jacob Frank, Victor L. Schrager and others delivered addresses. Funds are being raised rapidly to meet the mortgage on this building, which will enable it to be reopened.

Sister Mary Raphael Dies.—Sister Mary Raphael McGill, for thirty-five years on duty at Mercy Hospital, and known to thousands of medical students and practitioners of the city, died December 24. At the funeral services, interns of the hospital were active pallbearers, and members of the staff served as honorary pallbearers.

Personal.—Dr. Conrad G. Appelle, an intern in the Cook County Hospital, is reported to be seriously ill with typhoid fever.——Dr. Charles F. Yerger, Cicero, who has been seriously ill for two months from septicemia, secondary to a tonsillar infection, is convalescent.——Major Daniel W. Rogers, M. C., Ill. N. G., assigned Seventh Infantry, has resigned, and has been succeeded by Major Eugene G. Clancey.

Defective Children.—The special committee appointed to consider means for providing for physically defective children held a meeting, December 17, at which Health Commissioner Robertson stated that 86,000 children had been examined; that of these 12,000 had defective vision; 1,800, defective hearing; 6,215, diseased nasal organs; 29,642, enlarged tonsils; 14,652, adenoids, and 14,044 children had both enlarged tonsils and adenoids.

KENTUCKY

Trachoma.—Thirty-one mild cases of trachoma were discovered at Bowling Green in three schools comprising 870 pupils. This is said to be a smaller percentage of cases than in the schools of other towns of equal size in the state. The examinations were made by Dr. John McMullen, Lexington, government trachoma expert.

Louisville Physicians Elect Officers.—At the annual meeting of the Jefferson County Medical Society held in Louisville, December 18, the following officers were elected: president, Dr. Granville S. Hanes; vice presidents, Drs. Elmer L. Henderson and Joshua B. Lukins; secretary, Dr. W. Hamilton Long, and treasurer, Dr. Frank H. Ritter.

Health Officers' School.—The school of county and city health officers of Kentucky held a three-day session in Louisville, December 13 to 16, under the auspices of the state board of health. Asst. Surg. Gen. John W. Trask, U. S. P. H. S., spoke on birth and death reports, and Dr. John F. Anderson, formerly U. S. P. H. S., and Asst. Surg. Lewis R. Thompson, U. S. P. H. S., spoke on various phases of the anterior poliomyelitis situation. Dr. John G. South, Frankfort, presided over the conference.

Personal.—Dr. Luther D. Nichols, Hickman, was injured in an automobile accident, recently.——Dr. J. C. Sullivan, Dublin, has been appointed first assistant physician at the Eastern State Hospital, Lexington, to fill the vacancy caused by the appointment of Dr. Squire L. Helm as superintendent of the Institute for the Care of Feebleminded Children, Lexington.——Dr. Eldridge L. Bushby, Henderson, has been appointed second assistant physician to the Eastern State Hospital, Lexington.

Decision on Pollution of Streams.—At Princeton, suit was brought against the city for damages on account of pollution of a stream by city sewage, and also asking an injunction against the city enjoining it from discharging sewage into the stream. The circuit court granted the injunction and awarded $2,500 damages. The court of appeals affirmed the judgment for damages but dismissed the injunction on the ground that the evidence showed that the sewage could be discharged into the stream in such a way as not seriously to injure property owners below the sewer outlet.

LOUISIANA

New Armory Opened.—The Medical Department of the Louisiana National Guard formally opened its new armory in New Orleans, December 7.

New Officers.—At the annual meeting of the Orleans Parish Medical Society, in New Orleans, December 19, the following officers were elected: Dr. Paul J. Gelpi, president; Drs. Frank J. Chalaran, J. George Dempsey and Hector E. Bernadas, vice presidents, and Dr. Henry W. E. Walther, treasurer.

Personal.—Charles J. Ball, special inspector for the New Orleans Board of Health, has been appointed superintendent of the Hospital for Contagious Diseases, recently opened in that city.——Dr. John A. Devron, New Orleans, has been elected major in the Medical Corps of the Louisiana National Guard.——Dr. William T. O'Reilly has been reappointed health commissioner of New Orleans, and Dr. William H. Robin, secretary of the City Board of Health.

Adopts Higher Requirement.—At the meeting of the Louisiana State Board of Medical Examiners, Dec. 1, 1916, a resolution was adopted providing that beginning with the session of 1918-1919 no medical school or college will be considered in good standing that does not require for admission at least two years of work in an approved college of arts and sciences. This makes seventeen states in which the licensing boards have adopted the two-year standard.

Ragweed and Hay-Fever.—The New Orleans directorate of the American Hay-Fever Association will ask the legislature at its coming session for legislation for the eradication of ragweed near the city, believed to be the cause of the fall epidemic of hay-fever. Enforcement of ordinances of the city concerning weeds has practically eliminated the spring epidemic. Examinations of the air on windy days made by the association during the early fall disclosed much ragweed pollen, which was traced to its source outside the city.

MARYLAND

Books Left to College.—By the will of Dr. Holliday Hicks Hayden, Baltimore, his medical library is left to the College of Physicians and Surgeons.

Personal.—Dr. John F. Hogan, superintendent of Sydenham Hospital, has been appointed second assistant commissioner of health of Baltimore. He will have charge of the Division of Communicable Diseases which will include the work of the health wardens and the department nurses.——Dr. William R. Geraghty, St. Joseph's Hospital, Baltimore, has been appointed by the police board department examiner of women and female children to succeed Dr. Henry J. Walton, Baltimore, resigned.——Health Commissioner Blake has announced the appointment of Dr. Chester P. Woodward as inspector of pasteurization, created by the ordinance of estimates for 1917 in anticipation of the passage of the pure milk ordinance now before the city council.——Dr. George H. Hocking, Govans, a member of the State Lunacy Commission, was shot recently and seriously injured by a patient who had suddenly become violently insane.

Free Water for Hospitals.—The Baltimore Hospital Conference Association has taken up the question of the city supplying the hospitals with free water and removing ashes. Water bills vary from $693 for the University Hospital to $3,504 for the Johns Hopkins Hospital. In the case of the Hebrew Hospital, exemption from these charges would give $1,300 more annual income. In the case of the University Hospital, it would be equivalent to an addition of about $1,000 to their annual income. In the case of the Johns Hopkins Hospital it would probably mean between $4,000 and $5,000 a year added to their funds. Each of these institutions treats a large number of persons without charge—31 per cent. of all the patients at the University Hospital, 50 per cent. at the Hebrew Hospital, 64 per cent. at St. Joseph's Hospital. There are 225,000 patients treated free each year in the dispensaries of the hospitals forming the association. The association feels that if hospitals are big enough to do this great public work, the city should do its share by furnishing free water and removing ashes.

MASSACHUSETTS

Osteopaths' Offer Declined.—Osteopaths recently offered to establish a clinic for infantile paralysis patients in connection with the Boston City Hospital. The hospital trustees declined the offer and Superintendent Dowling stated that "the hospital was already prepared to do all that could be done for infantile paralysis patients."

Harvard Medical Lectures.—The faculty of medicine of Harvard University offers this year, as usual, a course of free public lectures to be given at the Medical School, Longwood Avenue, on Sunday afternoons, at 4 o'clock, from January 7 to April 22 inclusive. The program for January is as follows:

January 7—Rev. Dr. Francis G. Peabody, "Alcohol and Efficiency."
January 14—Dr. Hugh Cabot, "The Care of the Wounded with the British Expeditionary Force in France."
January 21—Dr. E. W. Taylor, "Infantile Paralysis; Precautions Necessary and Unnecessary."
January 28—Dr. W. T. Porter, "'Shock' in the Trenches."

Personal.—Dr. Frankwood E. Williams has resigned as chairman of the Massachusetts Advisory Prison Board and executive secretary of the Massachusetts Society of Mental Hygiene, to accept an appointment as associate medical director for the National Committee for Mental Hygiene and editor of the new quarterly magazine which will deal with mental health. He will also be in charge of the educational work of mental hygiene throughout the country.——Drs. Hermon C. Bumpus, Frank C. Richardson, F. W. Anthony, Allen J. McLaughlin, Milton J. Rosenau, Walter E. Fernald and George M. Kline have been elected directors of the Massachusetts Society for Mental Hygiene.——Dr. Henry S. Rowen, Brighton, has succeeded Dr. Francis J. Keany, deceased, as a trustee of the Boston State Hospital.——Dr. Hiram Amrial has been appointed assistant physician of the Boston City Hospital.

MINNESOTA

Hospital News.—St. Elizabeth's Hospital, Wabasha, is to be enlarged by the building of an "L" of the same height as the main building.——The Martha G. Ripley Memorial Hospital, adjoining the Maternity Hospital, Minneapolis, was dedicated, December 9. The dedicatory address was delivered by Rev. Franklin W. Sweet.

Sanatorium Notes.—The Wabasha County Tuberculosis Sanatorium, Buena Vista, was formally opened, December 19.——Clay-Becker Counties Sanatorium, Lake Park, was opened with elaborate ceremony, December 3. The institution, which has been constructed at a cost of $20,000, will accommodate thirty-two patients.

The Study of Health Problems.—A combination of all the health activities of Minneapolis under one nonpolitical board was discussed, December 18, at a meeting of the committee organized in April by the city council. The medical members of this committee are Dr. Arthur E. Benjamin, as representative of the Board of Charities and Correction, and Drs. Charles F. Dight and Jonas M. Kistler, representing the city council.

Personal.—Dr. Francis H. Gambell, mayor of Thief River Falls, has been appointed chairman of the Committee on Public Health of the Minnesota League of Municipalities.——Dr. Wilhelm S. Anderson, Thief River Falls, has resigned as president of the Tri-County Tuberculosis Sanatorium Commission.——Dr. John Sinclair, Redwood Falls, is said to be under treatment in the Redwood Falls Hospital.——Drs. John G. Cross and Thomas B. Hartzell are the members of the committee to draft an ordinance for the reorganization of the Minneapolis Health Department.——Dr. Ralph M. Thurlow has resigned as a member of the staff of the Fergus Falls State Hospital.

MONTANA

Personal.—Dr. Frederick M. Poindexter, Dillon, sailed from New York, December 9, to enter the Red Cross Service in France.——Dr. and Mrs. James E. Elliott, Bozeman, have moved to Polson.

New Hospitals.—Deer Lodge is to have a new hospital to cost $85,000 and to be managed by Catholic sisters.——The work on the new Sister's Hospital, Miles City, is almost completed and it is expected that the hospital will be opened early in the year.

New Officers.—At the annual meeting of the Silver Bow Medical Society, held at Butte, December 12, the following officers were elected: president, Dr. Arthur C. Jones; vice president, Dr. Joseph F. Borghoff; secretary, Dr. Spies V. Wilking, and treasurer, Dr. Harold Schwartz, all of Butte.

NEW MEXICO

Sanatoriums Consolidated.—The Cipes Tuberculosis Sanatorium and the Methodist Deaconess Hospital, Albuquerque, have been consolidated under the name of the Methodist Sanatorium. The institution has a capacity of fifty patients, and is under the control of the Home Missionary Society of the Methodist Episcopal Church.

New Officers.—At the annual meeting of the Bernalillo County Medical Association, held in Albuquerque, December 7, the following officers were elected: president, Dr. Joseph S. Cipes; vice presidents, Drs. Forrest F. Fadely and Oliver T. Hyde; secretary, Dr. Frank E. Tull, and treasurer, Dr. Sylvester G. Von Almen, all of Albuquerque.

NEW YORK

Personal.—Dr. James A. McMorrow, Syracuse, is ill with appendicitis at the Crouse-Irving Hospital.

New York City

Birth Control Rejected.—The Medical Society of the County of New York, at its meeting, December 26, by a vote of 210 to 72, voted against any change in the law which would permit physicians to advise married couples as to methods of birth control.

Fined for Selling Impure Drugs.—A health department inspector recently purchased sodium salicylate from a drug store which on analysis proved to be only 15 per cent. pure. The magistrate in the municipal term court imposed a sentence on the druggist of $500 fine or thirty days in jail.

Harvey Society Lecture.—The next Harvey Society lecture will be given at the New York Academy of Medicine on the evening of Jan. 13, 1917. At this time Prof. E. V. McCollum of the University of Wisconsin will lecture on "The Supplementary Dietary Relationships Among Our Natural Food Stuffs."

Increase in Street Accidents in 1916.—The figures compiled by the Bureau of Records of the Department of Health show that for the first eleven months of 1916 there were nearly 18 per cent. more deaths due to street vehicles and surface cars than in the corresponding period of 1916. In 1915 street vehicles were responsible for 453 deaths; in 1916, for 529. Electric cars were responsible for 77 fatalities in 1915, and for 96 in 1916. Falls on the sidewalks or streets caused 50 deaths during the first eleven months of 1915 against 81 for 1916. Falls from wagons, cars, etc., caused 46 deaths in 1915 and 59 in 1916. That there should be this increase in the number of accidents in view of the large amount of "safety-first" educational work and the improved traffic regulations is regarded as remarkable and as indicating the need of still greater efforts in this direction.

NORTH CAROLINA

District Society Meeting.—At the annual meeting of the Seventh District Medical Society, held in Monroe, December 5, the following officers were elected: president, Dr. Henry D. Stewart, Monroe; vice president, Dr. William F. Mitchell, Shelby, and secretary, Dr. Silas R. Thompson, Charlotte. It was decided to hold the next meeting at Shelby on the second Tuesday of October, 1917.

High Birth Rate.—The official records of the registration of vital statistics for the first eleven months of 1916 show 76,704 births, 31,776 deaths and 7,104 stillbirths. This is equivalent to a death rate of 13.4 and a birth rate of 32.2 per thousand. During the same period thirty convictions were secured for failure to make reports of births, and fines amounting to $115.98 were imposed.

Personal.—Dr. Herbert A. Codington has resigned as superintendent of the James Walker Memorial Hospital, Wilmington, to enter into private practice in that city.——Dr. Joel D. Whitaker, Raleigh, sustained a fracture of the leg in an automobile accident at Indianapolis several weeks ago, and will not be able to resume practice as early as expected, as it has been necessary to refracture the leg.

OHIO

Personal.—Dr. Charles C. Moffett, Elyria, is in a critical condition from cerebral hemorrhage.——Dr. John E. Monger, Greenville, is reported to have accepted the appointment of registrar of vital statistics under the state board of health.

Chiropractor Prosecuted.—Perry D. Parks, a chiropractor of Portsmouth, Ohio, was indicted in October by the Grand Jury of Scioto County on a charge of practicing medicine illegally. He pleaded not guilty and was released on bond.

Sue for Licenses.—Two chiropractors, Calvin C. Rutledge of Bowling Green and Joseph W. Netrefa of Cleveland have filed suits against the State Medical Board to compel the granting of certificates to practice which the board had refused to issue.

Academy Election.—At the annual meeting of the Columbus Academy of Medicine, December 18, Dr. Ernest Scott, Clintonville, was elected president; Dr. Raymond A. Rice, Columbus, vice president, and Dr. Ivor G. Clark, Columbus, secretary-treasurer.

Illegal Practitioner Arrested.—"Dr." Roland O. McFarren of Massillon, Ohio, was arrested recently on the charge of practicing medicine without a license. He is said to prescribe "Dr. McFarren's Vegetable Compound." He pleaded not guilty and was released on bond.

Divine Healer Arrested.—A self-styled "divine healer," Mary A. Rose, also known as Delia Deimling, is reported to have been arrested at Springfield, Ohio, recently, charged with practicing medicine without a license. She pleaded guilty and was released on condition that she leave the state and never return.

Cincinnati

Personal.—Dr. Rufus B. Hall, senior gynecologist at the Cincinnati City Hospital, has resigned after nearly twenty years' service.——Dr. Fletcher Langdon fell down stairs, December 12, sustaining severe injuries to the shoulder and nose.——Dr. J. Edward Pirrung has been appointed assistant police and fire surgeon.

PENNSYLVANIA

Endowment Raised.—The campaign for $200,000 for the endowment fund of the Woman's Medical College, Pennsylvania, has just been successfully completed.

Gift of Portrait.—The Philadelphia County Medical Society is indebted to Richard Y. Cooke, president of the Guarantee Trust and Safe Deposit Company of Philadelphia, for a portrait of William Lambdin Knight, M.D., eighteenth president of the society.

Personal.—Dr. J. Madison Taylor delivered an address before the College of Physicians, Pittsburgh, December 14, on "The Scope of Reconstructive Therapeutics."——Dr. Daniel J. McCarthy has returned after a visit of inspection to the prison camps in Germany.——R. A. Millikan, professor of physics at the University of Chicago, delivered an address on "Radiation from Atoms and Electrons," at the Franklin Institute, January 4.——Dr. Arthur S. Hagan, Uniontown, who was operated on six weeks ago at the Lakeside Hospital, Cleveland, has returned home convalescent.——Dr. George B. Kalb, after eighteen years of practice at Erie, has moved to Los Angeles.——At the one hundred and fourth annual meeting of the Academy of Natural Sciences, held in Philadelphia, December 19, Dr. Samuel G. Dixon, state commissioner of health, was elected president, and Dr. Edward J. Nolan, librarian.

Nurses May Give Anesthetics.—W. H. Keller, first deputy attorney general, has given an opinion to Dr. John M. Baldy, Philadelphia, president of the State Bureau of Medical Education and Licensure, that it is not illegal for a nurse who has been trained in the administration of anesthetics to administer such anesthetic as may be prescribed by a physician under and in accordance with his orders and directions. Mr. Keller says that there is nothing in the law which places the administration of an anesthetic on a different or higher plane than that of any other drug.

Examination of Schoolchildren Approved.—Dr. Samuel G. Dixon, state commissioner of health, has approved the plan adopted in Pittsburgh to examine all schoolchildren before the opening of school and has advised other school districts to adopt it if possible. In Pittsburgh the children come in groups of a dozen or more to the schools to be examined by voluntary physicians and medical inspectors and are given health certificates to show they are free of infantile paralysis, diphtheria, scarlet fever and measles. However, no state order for such examination has been sent out.

Contagious Diseases.—The total number of cases of poliomyelitis in the state from July 1 to Dec. 10, 1916, was 2,003, with 494 deaths. In July there were 110; August, 714; September, 778; October, 364, and November, 35. The state health commissioner has issued a circular calling attention to the law requiring every school in the state to be fumigated twice a month. At Williamsport an epidemic of diphtheria in one of the schools led to an investigation from which the health officer concluded that the bubble fountains were responsible for the spread of the disease. In one of the grades the children were so small that they could not drink from the fountains without the lips coming in contact with the cup or pipe. In this school use of the bubble fountain was discontinued and individual paper drinking cups provided. Eighteen cases of diphtheria had occurred among pupils since the opening of school.

UTAH

New Officers.—At the annual meeting of the Salt Lake County Medical Society, December 14, the following officers were elected: president, Dr. Robert H. Hampton; vice president, Dr. George G. Richards; secretary, Dr. Thomas A. Flood (reelected), and treasurer, Dr. William L. Rich, all of Salt Lake.

Infectious Diseases.—During the first seventeen days of December there were 191 cases of contagious diseases in Ogden, according to the semimonthly report of the health inspector. Of the cases, 21 were scarlet fever, 2 diphtheria, 163 measles and 5 chickenpox. There were three deaths, all attributed to measles, the epidemic of which was then subsiding. In Salt Lake City during the same period it was said that there were about 500 cases of measles.

VERMONT

Licenses Revoked.—The annual report of the Vermont Board states that the license of Dr. John W. Merrow has been revoked because of unprofessional conduct and fraudulent representation. Since the revocation, it is reported that Merrow has been arrested in New York for illegal transactions in the distribution of narcotics.

WASHINGTON

Washington Law Upheld.—The supreme court of Washington rendered a decision, December 5, holding that the Medical Practice Act of that state was constitutional. This decision was the result of a test case brought by Clyde Boreham, an osteopath, who was alleged to have practiced medicine and surgery without a proper certificate, in that he had removed a patient's tonsils. He was licensed to practice osteopathy only, and the court held that he was not entitled to perform the operation on that certificate. The lower court assessed a fine of $1 and costs.

CANADA

Tuberculosis in Canada.—In 1908 there were only 250 beds for the tuberculous available; in 1911, 900; today there are 2,000 in the various special hospitals and sanatoria throughout the Dominion.

Loss of Life in Asylum Fire.—The Asylum for Feeble-Minded Girls at St. Ferdinand de Halifax, near Lake William, Megantie County, Quebec, was destroyed by fire, December 31. In spite of the heroic efforts of the sisters to save the patients, forty-five children died and one of the sisters was also burned to death.

Deaths and Births in Ontario in 1915.—The total number of births registered in the province of Ontario in the year 1915 was 67,032, as against 66,225 in the previous year. The total number of births in the same year was 34,701 males and 32,331 females. The illegitimate births numbered 1,472, three more than in 1914. There were 678 twin births and 12 cases of triplets. Tuberculosis numbered 2,466 deaths, an increase of 122 over the previous year. The deaths from cancer totaled 1,982, an increase of 68 over 1914. The provincial board of health of Ontario is now conducting a campaign of education in respect to cancer and other diseases. In infant mortality the deaths under 5 years totaled 8,632; under 1, 6,838.

Civil Versus International War.—To show what great work lies before the Canadian people in prosecuting a vigorous campaign for the eradication of communicable diseases, the *Health Bulletin*, Toronto, compares the deaths in the Canadian Expeditionary Forces to date, with the deaths from typhoid and tuberculosis in Canada in the two years of war. The deaths from all causes in the Canadian forces in the war, during two and one-quarter years, have totaled 15,766, while from typhoid and tuberculosis in the same time they have totaled 17,350, or 1,584 more deaths from the two latter diseases than have occurred in war. The deaths from the group typhoid, scarlet fever, diphtheria, whooping cough, tuberculosis and measles, in the same time, have been 22,560, an excess over war deaths of 6,794. If Canada could prevent this wholesale destruction of human life in peace times, repopulation could be effected in a few years.

Medical Inspection of Schoolchildren.—January 1 the electors of Toronto voted on the question of placing the medical inspection of schoolchildren under the medical officer of health. Since its inauguration some six years ago, it has been under the control of the board of education, with a chief medical inspector and several assistants and school nurses. Lately, however, it has been found that the work of the school nurses and those of the well-organized department of health was being duplicated; and as there is every evidence of a desire to save on the part of the taxpayer, and as the board of health and the board of education could not arrange terms for amalgamation, which amalgamation has been estimated would save at least $35,000 to the city annually, it was decided to submit the proposition to the electors at the municipal elections. The medical officer of health, Dr. Charles J. Hastings, has issued a bulletin, setting forth the work of the department under his charge, in the form of a chain, which showed one link missing, namely, that of medical inspection of schoolchildren, and showed a continuous chain of health department activity as adopted in New York, Chicago, Philadelphia and other large cities of the United States. The results of the election will be announced in a later issue of THE JOURNAL.

GENERAL

Meningitis on the Border.—Army medical officers on the border report that there is no danger of the spread of meningitis among the troops. Among the Georgia troops there had been three deaths, and in a Pennsylvania regiment there were two cases, the patients being on the road to recovery. No new cases had developed in the eight days previous to the report.

Importation of Cassia and Other Spices.—The exportation from Hongkong to the United States of cassia for the first nine months of 1916 amounted, according to *Commerce Reports*, Dec. 28, 1916, to $365,520 gold, as compared with $67,817 in the same period of 1915. The exports of cassia oil were valued at $88,312, as compared with $37,550 for the nine months of 1915. The exports of spices to the United States were valued at a higher sum for the period named than for any whole previous year.

American Congress on Internal Medicine.—This organization held its second meeting and first scientific session in New York, December 27 and 28, at the Hotel Astor. Dr. Reynolds Webb Wilcox, in his presidential address, defined the aims and purposes of the organization and the conditions of membership. The first scientific session was devoted to a discussion of "The Ductless Glands in Cardiovascular Diseases and Dementia Praecox," and the second scientific session to a symposium on "Duodenal Ulcer." The following officers were elected: president, Dr. Reynolds Webb Wilcox, New York; vice president, Dr. Elias H. Bartley, Brooklyn; secretary-general, Dr. Heinrich Stern, New York, and assistant secretary, Dr. Joseph H. Byrne, New York, councilors for five years; Dr. Jacob Kaufmann, New York; Dr. Charles G. Jennings, Detroit; Dr. Judson Daland, Philadelphia; Dr. Francis X. Dorcum, Philadelphia; Dr. Arthur W. Fairbanks, Brookline, Mass. The secretary announced that the organization already had a paid up membership of over 300 and a considerable number of applications for membership.

Seaboard Association Meets.—The twenty-first annual session of the Seaboard Medical Association was held in Washington, N. C., December 19 to 22, under the presidency of Dr. David T. Tayloe, Washington, N. C. A public health session was held which was well attended, and at which addresses were made by Surg. Frederick C. Smith, U. S. P. H. S., and Drs. J. Howell Way, Waynesville; Cyrus Thompson, Jacksonville, and Charles O. Laughinghouse, Greenville, of the state board of health. Norfolk, Va., was selected as the place of meeting for 1917, and the following officers were elected: president, Dr. Kirkland Ruffin, Norfolk, Va.; vice presidents, Drs. Joseph L. Spruill, Columbia, N. C.; Robert L. Payne, Jr., Norfolk, Va.; Ira M. Hardy, Kinston, N. C., and Rufus L. Raiford, Sedley, Va.; secretary, Dr. Clarence Porter Jones, Newport News, Va., and treasurer, Dr. George A. Caton, Newbern, N. C.

Baby Week for 1917.—Stimulated by the success of Baby Week last year, the Children's Bureau, U. S. Department of Labor, is making plans for a bigger and better Baby Week for 1917. The bureau and the General Federation of Women's Clubs have agreed on the week beginning May 1 as the time most generally suited for the event, and urge that this week be adopted wherever local conditions permit. An effort will be made to have the welfare work incident to the week extended so as to cover all children still at home with their mothers and not limit the work to the period of infancy only. Stress is laid on the fact that well-cared-for and healthy mothers are necessary for the health and happiness of babies, and the importance of protecting the mother particularly during pregnancy and the lying-in period will be urged. Caution is given that in communities where infantile paralysis has been epidemic, all features should be omitted that might bring susceptible children together, but attention is called to the fact that Baby Week may well be so planned as to afford an excellent opportunity for giving information as to the proper physical training of children with paralyzed muscles. Persons interested in the planning and management of a Baby

Week can obtain, without cost, a bulletin on the subject, by applying to the Children's Bureau, Washington, D. C.

Bequests and Donations.—The following bequests and donations have recently been announced:

Goshen (N. Y.) Emergency Hospital, $10,000, by the will of Harry W. Van Cortland.

St. Christopher's Hospital for Babies, Brooklyn, N. Y., $87,103, by the will of Harrison Pownal Wallis.

Sanatorium for members of the International Ladies Garment Workers' Union suffering with tuberculosis, property valued at $75,000, donated by Miss Martha Hentschel, Kingston, N. Y.

Pennsylvania Hospital, Philadelphia, $5,000; Society for Organized Charity, $5,000; Bryn Mawr Hospital, Philadelphia Hospital for Women, Frederick Douglass Hospital, Lying-In Hospital, Philadelphia, Children's Aid Society, Friends' Insane Hospital and Oncologic Hospital each $2,000, by the will of Joshua L. Bailey.

Germantown (Pa.) Dispensary and Hospital, $100,000 by the will of Mrs. Mary Warden Harkness.

Long Island College Hospital, Brooklyn, N. Y., bonds of the market value of $50,000, a bequest from Dr. John A. McCorkle.

Public Nurse Association, Peoria, Ill., a donation of $1,000, by Trustees of the Proctor Endowment.

United Hebrew Charities, Montefiore Home, German Hospital and Mount Sinai Hospital, New York, each $1,445, by the will of William Josephy.

The Association for Improving the Condition of the Poor, St. Luke's and the Presbyterian Hospital, New York, each $100,000, by the will of Harris C. Fahnestock. A legacy of $100,000 was also paid to the Post-Graduate Hospital by the decedent just before his death.

Polyclinic Hospital, New York, $47,767; the Association for Improving the Condition of the Poor, the New York Skin and Cancer Hospital and the Laboratory for Surgical Research of New York University, each $25,883, by the will of Mrs. M. P. Draper.

Jewish Foster Home, Philadelphia, United Hebrew Charities, Jewish Hospital, and Philadelphia Jewish Sanatorium for Consumptives, each $500, by the will of Mrs. Bertha Rosshan.

Philadelphia Home for Incurables, Home for Consumptives, Samaritan Hospital, Presbyterian Hospital and Children's Homeopathic Hospital, each $5,000, by the will of John T. Martin, Philadelphia, the bequest payable after the death of his widow.

FOREIGN

Epidemics in Sonora.—At Ures, in the state of Sonora, 160 miles south of the Mexican border, it was reported, December 18, that smallpox in virulent form and a mysterious fever believed to be typhus had caused more than 500 deaths in the previous four weeks. An epidemic was also said to exist in the Alamosa district. Quarantine was said to be in force in the affected districts.

Import Prohibition on Alcohol.—By a decree of Dec. 22, 1916, according to *Commerce Reports*, Dec. 28, 1916, the French government has prohibited the importation of alcohol and certain alcoholic beverages of foreign origin into France and Algiers. The prohibition is not applicable to shipments for government account, for storage and reexport, or for chemical and pharmaceutical purposes.

Conservation of Mineral Springs.—By a decree issued by the president of Peru the exploitation of all mineral springs in that country will be under the direction of the public health department (*Commerce Reports*, Dec. 22, 1916). The department will disseminate information on the curative properties of the native mineral waters, and prevent the misuse of the springs, and will take charge of the baths and depots where the waters are taken.

Plague in India.—Rev. Henry Fairbanks, Ahmednager, India, reports that bubonic plague has been increasing for three months or more and is more severe than has been noticed for several years. Cats and rats were reported to be dying in many parts of the city, and the people fled panic stricken and died elsewhere, spreading the disease. Dr. Ruth P. Hume has started a campaign of inoculation, and with Dr. Lester H. Beals of Satara, has already inoculated 14,000 persons.

Sanitation in Shanghai.—The city of Shanghai is only partially supplied with modern methods of sewage disposal. Only the French section, it is said, is provided with septic vaults and other improvements. The other portions of the city still cling to the old methods on account of the commercial value of waste products. According to *Commerce Reports*, Dec. 27, 1916, the matter of modernizing the disposal of sewage for the whole city is under discussion, due largely to the increased cost of cleaning vaults, which is said to be almost prohibitive.

Chemical Industry in Russia.—The chemical industry in Russia has received great impetus from the war, and, according to *Commerce Reports*, Dec. 23, 1916, a number of works have already been erected and many others are projected. Among them is a formaldehyd factory at Vetluga, and a technical laboratory for the production of lanolin, naphthalene, etc., at Rostov. A large company has been formed at Moscow for the production of coke-benzol products and at Tomsk a chemical factory is projected for the making of medical chemicals. Several new works for making sulphuric acid have been erected in the Volga region, in the Donets basin, in the Caucasus and in the Urals. Mirrors, lenses and other optical instruments, thermometer tubing and chemical glass, formerly imported, are now being made. There is a large demand for microscopes and other scientific apparatus, as well as for articles for medical and surgical use.

LONDON LETTER

LONDON, Dec. 11, 1916.

The State Treatment of Venereal Diseases

This subject has already been described in THE JOURNAL. Progress is being made in most parts of the country with the schemes for providing additional facilities for diagnosis and treatment, in accordance with the recommendations of the royal commission, which have been adopted by the government. The Portsmouth scheme has already been described. For East Sussex it is intended to provide further clinics. An early start will probably be made with the new work at Addenbrooke's Hospital at Cambridge. The Norfolk and Norwich Hospital at Norwich is also early in the field, and arrangements for the establishment of a treatment center are being made with the local county councils. In the West Riding of Yorkshire it is proposed to establish in the first instance treatment centers at Sheffield, Leeds and Bradford, and in due course to extend the scheme so as to include some of the smaller hospitals in the county. Negotiations between the municipalities of Birmingham, Liverpool and Manchester, and the large hospitals in those towns are proceeding. In the case of some of the small rural counties it has been found impracticable to arrange for suitable treatment at any institution in the county; arrangements will have to be made with the nearest available hospital outside the county. Thus in the case of Westmorland the county council intends to use the Manchester Royal Infirmary, and patients in need of special treatment will have to undertake the journey to that city.

The London County Council Public Health Committee has prepared a scheme for the metropolitan area. It is to come into operation, January 1, and will extend to the areas bordering on the county. Associated with it are the county councils of Buckingham, Essex, Hertford, Middlesex, Surrey and Kent, and the borough councils of Croydon, East Ham and West Ham. Arrangements for diagnosis and treatment and the provision of laboratory facilities have been made with the principal London hospitals. The services will include the appointment of a committee of the hospital staff to draft a scheme for carrying out the special work at the hospital relating to the diagnosis and treatment of venereal disease, and to organize and superintend the arrangements within the hospitals; the appointment of a competent staff; the provision of beds for the patients; the treatment of outpatients at evening clinics at other suitable times; the supply by the hospital of salvarsan or its substitutes on an approved list; the supply to physicians of apparatus for taking specimens, and the furnishing of them with reports; the examination of specimens sent by physicians; the supply of statistical information of work done; the provision of free instruction for physicians and students; opportunities for physicians to act as clinical assistants at approved rates of remuneration; the employment of women physicians in clinics for women, and the issue of printed instructions for the guidance of patients and physicians. The hospital will receive payments in respect of (*a*) the work of the treatment center, including the supply of salvarsan or approved substitutes and any pathologic examinations of specimens, and (*b*) the pathologic examination of specimens sent to the hospitals by physicians in the areas of the various authorities. These payments will amount in 1917 to $167,000, of which London's share will be $97,750. The cost of the supply of drugs to London physicians during the first year is estimated not to exceed $250,000. To this must be added the cost of supplying salvarsan or its approved substitutes to poor law infirmaries and district and poor law medical officers, amounting to about $37,500, making a total of $137,500. It appears to the committee that any scheme for dealing with the disease would be incomplete unless supplemented by instructional lectures and the publication of information, and it has therefore included a sum for this purpose in the estimate of expediture.

At the London Hospital the scheme will be in full operation, January 1. In consideration of the payment of $15,000 a year by the London County Council, the hospital will provide treatment for all patients with venereal diseases coming from the areas of the participating authorities. The arrangements will consist of two parts: 1. A department for the treatment of genito-urinary diseases; the hospital will provide four sessions a week, two for men and two for women, the sessions for men to remain open until 7 p. m. The hospital will appoint two clinical assistants, one senior and one junior, the latter to be increased if necessary by the appointment as far as possible of local general physicians. 2. A department for the treatment of syphilis, in which, in addition to the ordinary outpatient treatment, salvarsan or approved substitutes will be administered. The hospital will appoint an additional assistant. The hospital will allot fifteen beds for the purpose of treating syphilis, and a certain number of beds for genito-urinary diseases. To insure secrecy the ward system will not be adopted, each patient being provided with a bed in a room occupied solely by him. The hospital will make arrangements for the examination of specimens sent by physicians in the participating areas whose patients do not attend the hospital.

The Work of the Research Committee

The second annual report of the Medical Research Committee appointed under the national health insurance scheme has been issued. A great deal of useful work has been accomplished. The needs of a nation at war have been kept in view. The work in connection with the war began with the help given to the army by the statistical department in compiling army medical statistics. A card index has been made for all military hospitals in the United Kingdom, now numbering over 2,000, and a similar index for stations and hospitals abroad is in progress of construction. This work, when completed, will serve a national purpose of the highest importance, wholly additional to its immediate military and scientific value. For many years after the conclusion of peace, claims for pensions or allowance must be expected to be advanced by men not invalided from the forces during service, or by their kinsmen or relatives. These claims will be based on disabilities alleged to be due to wounds or sickness on active service, and the only means of tracing the accuracy of statements made in support of these future claims will be the card index now being compiled from the hospital records. It is understood that huge financial loss has been sustained by the American government in consequence of the incompleteness of contemporary records during the stages of the Civil War.

Treatment of Wounds

Striking results have attended the study of wound infections and their treatment in the field and hospital. The idea that the dirty and often extensive wounds of warfare can be cleansed as a routine surgical procedure by the direct application of a strong antiseptic has been abandoned. Treatment of wounds is now directed to the facilitation of the physiologic processes of the body, on which Wright laid stress, by surgical methods for securing drainage and by irrigation methods of maintaining it, and of combating the invading organisms. Surgical testimony is still divided on the respective values of Wright's treatment by salt solutions alone without antiseptics, on the one hand, and, on the other, treatment by irrigation with Dakin's hypochlorite solutions, though both methods now are widely applied. The use of salt or of hypochlorite solutions, both of which are very cheap as compared to other antiseptics, has led to a great saving in hospital expenditure. Much work has been done on the properties of many old and new poisonous gases, with a view to improving the means of their ready detection and identification, the methods of protection against them, and of antidotal and other modes of treatment in cases of poisoning. Reference is made to the success of the preventive measures adopted in Egypt against the infection of the troops with bilharziasis. From 80 to 90 per cent. of the natives in the Nile delta are known to be affected by this disease, for which no cure is known when the worm is once established in the blood of its human host. Some idea of the immensity of the national interest in this disease, and in its adequate control at the present time in Egypt, may be gained from the statement that of the men infected with bilharziasis during the South African War, 359 were still receiving "conditional pensions" in 1911 at a cost to the state of about $32,000 per annum, exclusive of those already permanently pensioned.

Clinical Facilities for Women

The subcommittee of the Academic Council on Medical Education of Women in the University of London has just issued a report. On the further provision of clinical facilities for women students in London, it is stated that no anxiety need be felt about teaching men and women together, though the deans of the various schools have supported the idea that the men students would object to the presence of women students. The reasons generally given for this are: (*a*) Women are keener in their work and take the front places at demonstrations and obtain an unfair share of clinical opportunities; (*b*) women are unable to contribute to the athletic life of the school. The committee is of opinion that no valid objection can be maintained against the system of coeducation for men and women medical students, and that this is the only system by which the general policy of the University of London can be effectively carried out. The subcommittee considers that the facilities for the medical education of women would not be adequate in any hospital or medical school unless resident medical and surgical appointments are open to men and women on equal terms; and it hopes that these facilities will be provided in some of the schools of the university at no distant date. In October, 1916, 127 students entered the London School of Medicine for Women, twenty women entered at Charing Cross Hospital Medical School and King's College, making a total of 157 women students in London. Of these, 115 are in their first year.

The Professorial Board of University College, London, has reported on the foregoing report, and while agreeing with it in many respects, differs in others. For example, it is stated that "if women were admitted to only a few schools, there is reason to believe that those schools would lose men students and would become mainly schools for women." The board, therefore, which had been urged to open the anatomy department at University College to women, recommends: "That the question of admitting women to the department of anatomy be deferred until adequate provision of clinical facilities for women students in London has been made and until it is possible to provide suitable accommodation for them."

PARIS LETTER

PARIS, Dec. 7, 1916.

The War

PROTECTION OF MATERNITY DURING THE SECOND YEAR OF WAR

Last year Dr. Pinard, formerly professor of clinical obstetrics at the Faculté de médecine de Paris, communicated to the Académie de médecine statistics showing that protection of maternity and of the new-born in Paris had been so well effected during the period 1914-1915 that the mortality under these two heads was actually lower than in the preceding periods, which is the reverse of what previous war time experience would lead us to expect. These happy results were due chiefly to the particular attention paid to the mothers and children by the Assistance publique (THE JOURNAL, March 20, 1915, p. 1010). Recently Pinard reported to the Académie results in Paris for the second year of war. Of 26,179 births registered in Paris, 95 per cent. were attended by agents of the Assistance publique. While the measures of protection have remained the same during the past year, the results have been less satisfactory. The number of stillbirths fell from 7.69 to 6.63 per cent.; the number of children nursed by wetnurses from 31 to 13.55 per cent.; mortality of mothers from 0.64 to 0.46 per cent., and desertion of infants from 4.98 to 2.88 per cent. In the second period these figures rose again, being, respectively, for 1916, 7.67, 22, 0.48 and 5.21 per cent. On the other hand, infant mortality has remained practically stationary for the first year of life, but has increased for the second year. The cause of this increase is found in infectious diseases, particularly measles and whooping cough. The increase in the number of abandoned and premature children, the diminution in the average weight of the new-born, and the decrease in the number of meals served by the maternity canteens to nursing mothers have an economic cause which Pinard points out as the presence of pregnant and nursing women in ammunition factories. These women are unaware of the danger to themselves and of the risks to which they expose their children. Pinard therefore demands that employment at these factories should be forbidden every pregnant woman, every woman nursing a child, and every woman who has been confined within six months.

THE URGENT SURGERY OF LUNG WOUNDS

Dr. Pierre Duval, of the Faculté de médecine de Paris and surgeon of the hospitals, recently reported to the Société de chirurgie de Paris fourteen cases of urgent operation for wounds of the lung. All of these operations were performed to arrest a pulmonary hemorrhage threatening the life of the patient, or for the relief of serious asphyxia. They were, therefore, operations of extreme urgency performed on patients in imminent danger. These observations show the value of this intervention, for of the fourteen patients, ten were cured. The technic employed was that devised by Duval: resection of a single rib; wide opening of the pleura; suturing of the wounds by deep hemostatic sutures; drying of the pleura, and suture of the thoracic wall. In such cases the projectile is removed only if easily found.

MEDICAL ASSISTANCE TO DISCHARGED SOLDIERS

The minister of the interior has appointed a commission to study means of securing medical and pharmaceutical assistance or hospital accommodation for soldiers discharged for wounds or illness contracted or aggravated while with the colors.

THE AMERICAN MEDICAL DETACHMENT WITH THE ARMY

A number of Americans who have devoted themselves to the service of our wounded have collected their souvenirs in a volume which has just been published under the name of "Friends of France." The preface of this is written by Mr. A. Piatt Andrew, inspector general of the American medical sections.

ALTERNATING USE OF ANTISEPTICS

Dr. Charles Richet, professor of physiology of the Faculté de médecine de Paris, recommends that surgeons alternate one antiseptic with another in the treatment of infected wounds in order to avoid the possibility of germs becoming habituated to poisons. In a communication to the Académie des sciences, Dr. Richet divides antiseptics into four groups: (1) oxidizing agents (hypochlorites, hypobromites, iodin, chlorin, hydrogen peroxid, ozone, potassium permanganate, etc.); (2) compounds of heavy metals (salts of mercury, silver, copper, zinc, etc.); (3) substances belonging to the aromatic series (phenols, salicylates, thymol, naphthol, creosote, etc.), and (4) miscellaneous products (formic aldehyd, chloroform, chloral, essential oils, fluorids, boric acid, etc.). One may thus employ an antiseptic of the first group on the first day, one of the second group on the second day, and so on. In these conditions the microbes do not have an opportunity to develop immunity to the antiseptic, and the results obtained are much better.

EAR DISEASES AND THE WAR

Affections of the ear are frequent in the army, and take up much of the time of military surgeons. Dr. J. Molinié has made a report on this subject to the Réunion médicale de la 1-ère armée. He groups the cases in three categories: (1) diseases contracted while with the army; (2) lesions caused by "engines of war," and (3) exacerbations or aggravations of chronic affections. Ear diseases contracted in the army constitute 21 per cent. of the whole number. The most common of these is acute otitis media following affections of the upper respiratory passages, fevers and infectious diseases. From 7 to 8 per cent. of these cases are accompanied by mastoiditis. This condition is almost invariably cured in from three to six weeks, and the patient is able to resume his service. The lesions caused by "war engines" constitute about 28 per cent. The external ear is occasionally injured, but it is usually the middle ear which suffers. Unilateral or bilateral perforation of the tympanum is frequent. The ossicles are occasionally dislocated. Traumatic perforation of the tympanum is characterized by the presence of a narrow hemorrhagic border. The treatment is plugging of the external meatus with antiseptic cotton. The loss of hearing is slight, and the patient is soon fit to resume his service. Deafness from shock is less frequent than that due to traumatic perforation. As a rule, it amounts to little more than a kind of auditory "dazzling" which disappears completely with time. True and persistent lesions of the labyrinth are an exception. The most intractable cases of shock deafness are of psychic origin and are not infrequently simulated. The auditory-palpebral reflex is of value in the differential diagnosis of these different conditions. These cases of shock deafness are becoming more and more numerous with the increasing use of heavy artillery. Their numbers are, in a certain sense, an index of the fluctuations in the struggle. It will be possible to reduce these numbers by protecting the ear of the combatant, either by means of a flapped cap worn under the helmet, or by a metallic ear protector attached to the helmet and capable of being lowered or raised at will. Of the ear diseases among soldiers calling for treatment, 51 per cent. are chronic affections either aggravated or exacerbated. This group is practically evenly divided between chronic suppurative otitis media, and chronic deafness. The prevalence of the former has been the occasion of a new regulation to the effect that intermittent suppurations must be treated at the front if the lesions are limited to the middle ear. But these new regulations cannot become effectual, unless the patient can be seen by a specialist who will decide whether his case falls within their scope. Chronic deafness is often attributed by the patient to the noise of the cannon. There is practically never any improvement from treatment in these cases, and the specialist's task is limited to formulating an opinion as to the military fitness of the patient. In forming judgment on this, it is not sufficient to take into consideration an estimate of the acuity of the hearing as tested in the usual way. For this special purpose it is necessary to allow for certain compensations, natural or artificial, of slight deafness. The extent of compensation can be judged only by a careful observation of the patient in the ordinary surroundings of his life. Further, the specialist has to bear in mind that there are occupations in the army for which his patient may be suitable in other respects and which do not require acute hearing.

Turning now to war victims suffering from total bilateral deafness, the method of reeducation by lip reading appears to give excellent results. This system is being generalized in all centers in the interior of the country. With regard to complete deafness, the important problem presents itself of differentiating between pathologic conditions and malingering. It is now well ascertained that in addition to complete deafness dependent on organic lesions, there are other genuine cases in which no morphologic change can be demonstrated. Differential diagnosis acquires especial importance because of the difference in prognosis in the two cases. For this reason it is necessary to employ the most precise scientific methods to eliminate as far as possible every source of error, and, in particular, that which may be due to insincerity of the patient. In this connection it appears likely that investigation of the ocular and vasomotor reflexes under a purely auditory stimulus should offer the surest guarantees. The number of patients suffering from ear discharges is considerable, and constitutes a heavy burden on the specialists. It is the practice at present to retain patients suffering from chronic otorrhea with the army. This is in correlation with the fact that for the most part ear trouble has never interfered with work in civil life. It is, of course, necessary to give these patients treatment for a few days. Such a treatment properly applied occasionally leads to complete cure. In the absence of complications calling for mastoid operation, ear discharge is not considered incompatible with service in the army.

Marriages

VICTOR LUMAN ROCHO, M.D., Woodburn, Ore., to Miss Ruby Esther Francis of Oregon City, Ore., December 14.

THEODORE LIVINGSTON CHASE, M.D., to AGNES BARR, M.D., both of Philadelphia, in New York, December 6.

KENT EDWARD DARROW, M.D., Fargo, N. D., to Miss Cora Belle Hodgson of Gardner, N. D., December 2.

BLAINE AUGUSTUS YOUNG, M.D., Merriman, Neb., to Miss Edith C. Barnes of Cody, Neb., December 24.

JAMES ALPHONSO TAYLOR, M.D., to Miss Jessie Craven, both of Montpelier, Ind., December 22.

CHARLES EDWARD SCHARF, M.D., to Miss Grace Elizabeth Mullin, both of Chicago, November 30.

EDWIN EVERETT JACK, M.D., Boston, to Miss Mary J. Denny of Brookline, Mass., December 11.

WILLIAM JOHN GATTI, M.D., to Miss Rose Wery, both of Punxsutawney, Pa., November 15.

STEPHEN HURT WATTS, M.D., University, Va., to Miss Sarah Tilt of Atlanta, Ga., December 21.

NORMAN DIXON CURRY, M.D., to Miss Neal Jelleneoux, both of Chicago, in October.

JOHN MCCOY, M.D., to Miss Florence A. Riley, both of New York, December 8.

Deaths

Claude Lamont Wheeler, M.D., New York; McGill University, Montreal, 1889; aged 52; died at his home in Brooklyn, December 30, from pneumonia. Dr. Wheeler was for many years assistant editor of the *New York Medical Journal* under the late Dr. Frank P. Foster, and succeeded the latter in the editorship of the journal.

Holliday H. Hayden, M.D., Baltimore; College of Physicians and Surgeons, Baltimore, 1892; aged 47; a Fellow of the American Medical Association; demonstrator of anatomy and clinical medicine in his alma mater; later associate professor of applied anatomy in the University of Maryland; vaccine physician of Baltimore; died at his home, December 20.

William Francis Skinner, M.D., Chambersburg, Pa.; Jefferson Medical College, 1890; aged 48; a Fellow of the American Medical Association; president of the Cumberland Valley Medical Association in 1913; a member of the staff of the Chambersburg Hospital; coroner of Franklin County; died at his home, December 18.

Richard M. Thomas, M.D., Greensburg, Ind.; Medical College of Ohio, Cincinnati, 1883; aged 58; a member of the Indiana State Medical Association; local surgeon for the B.g Four System; died in the Good Samaritan Hospital, Cincinnati, December 17, after a surgical operation.

William F. Smith, M.D., Glenn Springs, S. C.; University of Pennsylvania, Philadelphia, 1861; aged 82; for more than a half century a practitioner of Spartanburg County, S. C.; surgeon in the Confederate service during the Civil War; died at his home, December 3.

J. Thomas Nunnally, M.D., Griffin, Ga.; Memphis Hospital Medical College, Memphis, Tenn., 1894; aged 45; formerly a Fellow of the American Medical Association; a member of the Tennessee State Medical Association; died at his home, December 15, from nephritis.

T. M. Cherry, M.D., Norton, Va.; College of Physicians and Surgeons, Baltimore, 1891; aged 54; a Fellow of the American Medical Association; a well known practitioner of southwest Virginia; died at his home, December 11, from cerebral hemorrhage.

Carter E. Damrell, M.D., Tulsa, Okla.; Central Medical College, St. Joseph, Mo., 1898; aged 42; for eight years health officer of Enid and Garfield County, Okla.; died at the home of his father-in-law in Enid, December 17, from organic heart disease.

George W. Bailey, M.D., Philadelphia; University of Pennsylvania, 1868; aged 76; who gave up his practice twenty-two years ago to devote his time to Sunday school work; died in a sanatorium at Battle Creek, Mich., December 19, from disease of the kidney.

Emory Oliver Onion, M.D., Summum, Ill.; Keokuk (Iowa) Medical College, 1906; aged 38; a Fellow of the American Medical Association; died, December 16, in the Macomb (Ill.) Hospital, where he had been under treatment for tuberculosis.

James Lawrence Sullivan, M.D., Bridgeport, Conn.; College of Physicians and Surgeons, Baltimore, 1901; aged 42; a member of the Connecticut State Medical Society; died in St. Vincent's Hospital, Bridgeport, August 12, from Hodgkin's disease.

Lee B. Harvey, M.D., Colville, Wash.; Marion-Sims College of Medicine, St. Louis, 1900; aged 48; a member of the Washington State Medical Association; mayor of Colville from 1900 to 1909; died at his home, December 16, from acute nephritis.

Milton Oscar Stemmler, M.D., Myrtle Point, Ore.; Marion-Sims College of Medicine, St. Louis, 1900; aged 45; formerly a member of the Oregon State Medical Association; died in Mercy Hospital, North Bend, Ore., December 14, from typhoid fever.

Frederick Frelinghuysen Coleman, M.D., Asbury Park, N. J.; New York University, New York, 1893; aged 52; a graduate in pharmacy; died at a private sanatorium in Stamford, Conn., November 27, from disease of the brain.

Charles Henry Linley, M.D., Atchison, Kan.; Miami Medical College, Cincinnati, 1877; formerly a member of the Kansas Medical Society; a resident of Atchison for half a century; died suddenly in that city, December 20.

Howard Edwin Hiestand, M.D., Kenton, Ohio; Medical College of Ohio, Cincinnati, 1884; aged 58; a member of the Ohio State Medical Association; died in Grant Hospital, Columbus, December 15, from myocarditis.

Richard Biddle Faulkner, M.D., Pittsburgh; College of Physicians and Surgeons in the City of New York, 1875; aged 63; formerly a Fellow of the American Medical Association; died at his home, December 20.

William John Coates, M.D., New York; New York University, New York, 1882; aged 59; dean of the College of Veterinary Surgery of New York University; died at his home, December 19, from diabetes.

Samuel L. Cochran, M.D., Louisville, Ky.; Louisville (Ky.) Medical College, 1893; aged 61; formerly professor of anatomy and physiology in his alma mater; died at his home, December 18, from pneumonia.

James Joseph Walsh, M.D., Olyphant, Pa.; Jefferson Medical College, 1911; aged 29; a member of the Medical Society of the State of Pennsylvania; died at his home in Scranton, recently, from diphtheria.

James Dorland, M.D., Dorland, Ont.; McGill University, Montreal, 1875; aged 64; formerly a practitioner of Milwaukee, Wis., and Chicago; died at his home, December 10, from cerebral hemorrhage.

David C. Knott, M.D., Plymouth, Ind.; Eclectic Medical Institute, Cincinnati, 1882; aged 59; a Fellow of the American Medical Association; died at his home, November 8, from angina pectoris.

James E. Lay, M.D., Hallettsville, Texas; Tulane University, New Orleans, 1868; aged 73; a Fellow of the American Medical Association; a Confederate veteran; died at his home, December 13.

William David Hollmers, M.D., Chicago; College of Physicians and Surgeons, Chicago, 1915; an intern in Cook County Hospital, Chicago; died in that institution, December 23, from typhoid fever.

Josaphat A. Gaucher, M.D., Putnam, Conn.; Baltimore Medical College, 1912; aged 26; a Fellow of the American Medical Association; died at his home, December 17, from lobar pneumonia.

Wesley R. Churchill, M.D., Reedsburg, Wis.; Hahnemann Medical College, Chicago, 1874; aged 71; a specialist on diseases of children; died at his home, December 7, from pneumonia.

Warren Bateman Brown, M.D., Richmond, Calif.; Starling Medical College, Columbus, Ohio, 1888; aged 54; founder of the first newspaper in Richmond; died at his home, December 10.

John Beach Knapp, M.D., New York; College of Physicians and Surgeons in the City of New York, 1875; died in St. Luke's Hospital, December 18, from postoperative pneumonia.

Elery Channing Webster, M.D., Marion, Ind.; Eclectic Medical Institute, Cincinnati, 1868; aged 72; died at his home, December 17, from cerebral hemorrhage.

John Leonidas Murray, M.D., Lexington, Tenn.; Vanderbilt University, Nashville, Tenn., 1874; aged 74; a veteran of the Civil War; died at his home, December 8.

Frederick Haskins, M.D., Neosho, Mo.; Ensworth Medical College, St. Joseph, Mo., 1903; aged 54; died in St. Joseph, Mo., December 17, from pneumonia.

Francis Mason Hayes, M.D., Buffalo; New York University, New York, 1887; aged 63; died in Lewiston, N. Y., December 10, from pneumonia.

Charles E. Bennett, M.D., Cortland, N. Y.; Syracuse, N. Y., University, 1880; aged 58; died in the Cortland Hospital, November 30, from septicemia.

W. L. Hayne, M.D., Mallorysville, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1889; aged 63; died at his home, December 4.

Joseph D. Boggs, M.D., Norborne, Mo.; Kansas City, Mo., Medical College, 1886; aged 82; died at his home, December 3, from nephritis.

Frank W. Le Fevre, M.D., Portland, Ore.; Cleveland University of Medicine and Surgery, 1885; aged 59; died at his home, December 2.

Justin D. Root, M.D., Brandon, Wis.; Hahnemann Medical College, Chicago, 1884; aged 58; died at his home, November 21.

James W. Grisard, M.D., Winchester, Tenn.; University of Nashville, Tenn., 1870; aged 68; died at his home, December 7.

D. Tonjes Krudop, M.D., Los Angeles; Hahnemann Medical College, Chicago, 1888; died recently at his home.

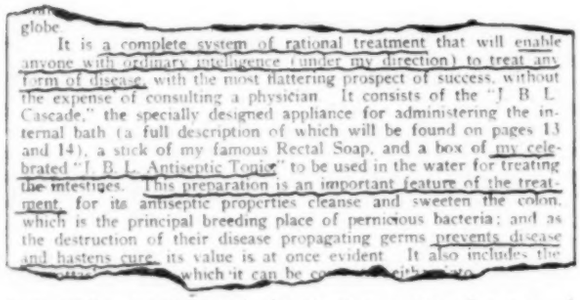
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE J. B. L. CASCADE TREATMENT

The Commercial Possibilities in Rectal Enemas

"The J. B. L. Cascade Treatment" is exploited by one Charles A. Tyrrell of New York City. It consists in the self-administration of rectal enemas—containing a "patent medicine" sold by Tyrrell—by means of a rectal syringe known as the J. B. L. ("Joy-Beauty-Life") Cascade.



globe.

It is a complete system of rational treatment that will enable anyone with ordinary intelligence (under my direction) to treat any form of disease, with the most flattering prospect of success, without the expense of consulting a physician. It consists of the "J. B. L. Cascade," the specially designed appliance for administering the internal bath (a full description of which will be found on pages 13 and 14), a stick of my famous Rectal Soap, and a box of my celebrated "J. B. L. Antiseptic Tonic" to be used in the water for treating the intestines. This preparation is an important feature of the treatment, for its antiseptic properties cleanse and sweeten the colon, which is the principal breeding place of pernicious bacteria; and as the destruction of their disease propagating germs prevents disease and hastens cure, its value is at once evident. It also includes the [illegible] which it can be co[illegible]

Photographic reproduction (reduced) of a portion of a page of the booklet sent out by Tyrrell to those who answer his advertisements. Imagine a person of "ordinary intelligence" attempting to treat diphtheria, smallpox, cancer, consumption, Bright's disease, etc. ("any form of disease") with Tyrrell's "complete system" consisting of a rectal syringe, a stick of soap and a teaspoonful of salt and borax in water!

Before discussing the J. B. L. Cascade treatment, it is well to give the reader some facts which, while incidental, have a bearing on the subject and will aid in giving a truer perspective of the business under discussion. Tyrrell, according to our records, was born in 1843. He received a diploma from the Eclectic Medical College, New York, in 1900—when he was 57 years old! In addition to the J. B. L. Cascade treatment, Tyrrell was president of the concern that exploited the "Ideal Sight Restorer," sold as a cure for most eye-ills. This has been advertised under such claims as: "cures not only the refractive errors of the eye—nearsight, farsight, oldsight and astigmatism—but also such dreaded diseases as cataract, glaucoma, cross-eye and paralytic blindness." The Ideal Sight Restorer was a piece of tubing with a rubber bulb attached for the purpose of producing a partial vacuum over the eyeballs. The disasters that might result from the indiscriminate use of an appliance of this sort in certain diseased conditions of the eye are more obvious to physicians than to the public. In advertising this "eye cure" the concern sent out what was claimed to be "an unprejudiced journalistic opinion" from the *United States Health Reports*. This publication, which was presumably named so as to mislead the public into believing it was a government bulletin, was, to quote from a government report, "a fraudulent advertising concern which wrote editorial endorsements for any disreputable institution for a cash consideration." In addition to this sort of testimony for the "Ideal Sight Restorer," there were also reports from professional testimonial writers.

Tyrrell has also appeared in the rôle of publisher and "editor-in-chief" of a quasi-medical magazine, *Health*, issued from the same address as the "Ideal Sight Restorer" and the "J. B. L. Cascade." He had for "associate editor" C. S. Carr, the quack, who for years was connected with the Peruna concern, and who also exploited a mail-order medical concern of his own. The advertising pages of *Health*, in addition to giving large space to the "Ideal Sight Restorer," the "J. B. L. Cascade treatment" and Carr's mail-order concern, reeked with frauds. Brinkler, the "Food Expert," the make-you-tall "Cartilage Co.," the Actina eye-and-ear-cure, the Okola eye-cure, the Oxydonor swindle and the notorious New York Institute of Science—all of which have been officially stamped as frauds by the United States authorities and denied the use of the United States mails—found haven in the pages of *Health*. These facts are given that our readers may get some conception of Tyrrell's business ethics and also for the information of those publishers who have opened the advertising pages of their magazines to the Tyrrell "treatment."

THE "J. B. L. CASCADE"

Tyrrell claims to be the inventor of the J. B. L. Cascade. The public is asked to believe that he, "after several years of patient experimenting, succeeded in perfecting the appliance that bears his name." Elsewhere Tyrrell declares: "I have . . . . invented an apparatus, the J. B. L. Cascade." What are the facts? According to the United States patent records, one Henry M. Guild invented the device, which was patented in 1903. Guild also invented and obtained an additional patent on a modified form of the device in 1904. Both of these patents were assigned to the Tyrrell concern, the first by Guild himself and the second by Guild's executor. So much for Tyrrell's claim that he is an inventor!

The J. B. L. Cascade consists essentially of a rubber bag, shaped like a typical, rubber hot-water bottle. A hard rubber injection point is fastened on one of the flat sides. To operate the device the rubber bag is filled with the "J. B. L. Antiseptic Tonic" solution—of which, more later—the point is then inserted in the anus and the weight of the body on the bag forces the liquid into the rectum. In its essentials the device is virtually the same as one that was patented in Canada in 1892 and in the United States in 1894 by one Joseph Lalonde, a British subject who lived in Winnipeg.

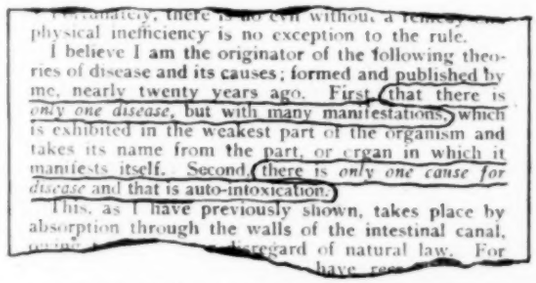
TYRRELL'S KEY-NOTE THEORY

Tyrrell claims to have originated a theory of "disease and its causes." Whether the "theory" was devised as a convenient accessory to his exploitation of the "Cascade" and the "patent medicine" that goes with it, or whether it is merely an indication of stupendous ignorance, makes little difference; it is bizarre and fantastic to the point of silliness. Here it is:

"There is ONLY ONE DISEASE, but with many manifestations."
"There is ONLY ONE CAUSE FOR DISEASE, and that is auto-intoxication."

But Tyrrell's theory is no more preposterous than the claims he has made for his J. B. L. Cascade treatment. For instance:

"It . . . enables any one with ordinary intelligence (under my direction) to treat successfully any form of disease, that is curable, . . ."



[illegible] physical inefficiency is no exception to the rule.

I believe I am the originator of the following theories of disease and its causes; formed and published by me, nearly twenty years ago. First, that there is *only one disease*, but with many manifestations, which is exhibited in the weakest part of the organism and takes its name from the part, or organ in which it manifests itself. Second, there is *only one cause for disease* and that is auto-intoxication.

This, as I have previously shown, takes place by absorption through the walls of the intestinal canal, [illegible] disregard of natural law. For [illegible] have [illegible]

Photographic reproduction (reduced) of part of a page of one of Tyrrell's booklets. Here he gives his theory of "disease and its causes."

"No matter of how long standing your trouble may be, if there is a possibility of cure, this treatment will effect it."
"It is the greatest preservative of health ever known."
". . . a system of treatment that will both cure and prevent disease. . . ."
"My system of treatment should be used by every one whether in sickness or health."

These are but a few of the claims that Tyrrell has made at various times for his "treatment."

THE INFERENTIAL UNTRUTH

The Propaganda Department has received scores of inquiries regarding the J. B. L. Cascade treatment. Some of these have come from publishers who make some attempt to censor their advertising pages. The various absurd claims made by Tyrrell have been pointed out to these publishers. Coincidently with these criticsms the Tyrrell advertising has become not more

honest but more cautious. To illustrate some of the minor modifications in which the direct has given way to the inferential falsehood, we quote in parallels, italicizing to make the comparison clear:

OLDER CLAIMS	NEWER CLAIM
"I have . . . *cured* thousands. . . ."	"I have . . . *benefited* thousands. . . ."
". . . my method of *curing* and preventing disease. . . ."	". . . my method of *treating* and preventing disease. . . ."
"I cleanse the system . . . thereby removing the cause of *all* disease."	"I cleanse the system . . . thereby removing the cause, in my opinion, of *much* disease."
"Typhoid fever and Appendicitis *are* positively *cured* . . . by the J. B. L. Cascade Treatment."	"Typhoid fever and Appendicitis *may* positively be *relieved* . . . by the J. B. L. Cascade Treatment."

The Wonderful Mission of the Internal Bath
By C. G. Percival, M.D.
CRAFTSMAN ADVERTISING DEPARTMENT
Why Internal Bathing Is Essential to Health
By C. GILBERT PERCIVAL, M.D.
HOW WEAK EYES ARE STRENGTHENED BY EXERCISE
By C. Gilbert Percival, M.D.
WHAT AND WHY IS THE INTERNAL BATH?
By C. GILBERT PERCIVAL, M.D.
TO READERS OF HEALTH
C. GILBERT PERCIVAL M.D.

Greatly reduced photographic reproductions of part of four full-page advertisements of Tyrrell's "J. B. L. Cascade" and "Ideal Sight Restorer." These consist of dissertations by one "C. Gilbert Percival, M.D." Percival was one of the associate-editors of *Health*, a pseudo-medical sheet published by Tyrrell. We also reproduce one of Percival's own advertisements in which he guaranteed a cure of obesity, rupture, piles, hydrocele, etc. Percival has given testimonials also for "Absorbine, Jr.," "Somnos" and "Lignol." Tyrrell used to publish Percival's name among the "prominent physicians" who used and prescribed the J. B. L. Cascade!

Careful study of the Tyrrell "literature" that has been sent out during the past six or seven years is an education in mail-order quackery. True to type, there is a series of "follow-up" form letters, so prepared as to lead the uninitiated to think that they are individual communications. The first of the series comes "in response to your request" and informs you that the "J. B. L. Cascade Treatment" is, in Tyrrell's judgment, "one of the most common sense and practical methods . . . for preventing and relieving most of the diseases known to the world." Tyrrell emphasizes that those who send money for his "treatment" (which includes a "Cascade," a stick of soap and a box of the marvelous "Antiseptic Tonic") will also be "entitled to unlimited free consultation." Tyrrell modestly adds that as his "reputation is thoroughly established," the purchaser of the "Cascade" secures for himself "the constant service of a New York specialist."

The second letter of the series still further carries out the deception of making its recipient believe it to be a personal communication, by being written on professional rather than business stationery. In this letter Tyrrell declares that he has "taken a personal interest in your case." Of course, most people who receive this letter do not realize that it is a stock letter, sent out as a matter of routine and, in all probability, never seen by Tyrrell, except when the original order was given for the printing. In the third letter of the follow-up series, Tyrrell evinces surprise that the victim has not purchased the "treatment" and incidentally obtained "the advantage of my able advice." This letter makes certain concessions in the price of the treatment and awaits "your valued favors."

With the first of the letters comes a booklet, one of several that Tyrrell sends out to prospective purchasers of his "treatment," containing among other material a number of testimonials. These testimonials are indexed and in the older books the index was said to be "to Diseases Cured by the J. B. L. Cascade Treatment." In the books now being sent, the index is said to be of "Testimonials Showing the Most Astonishing Results Obtained By the Use of the J. B. L. Cascade," etc. The older books alleged that Tyrrell's treatment had cured (*vide* index of testimonials), among many other diseases, "Brain Fever," Consumption, Change of Life (*sic!*), Dysmenorrhea, Gastritis, "Heart Trouble," Insanity, Paralysis and Scarlet Fever. The more recent books do not contain the testimonials alleging cures of the conditions just listed, but they give a list that is sufficiently alluring for those sick or near-sick who are in search of a panacea. Thus one can go down the list of alleged cures alphabetically from "appendicitis" through "bladder trouble," "delirium tremens" and "epilepsy" to "kidney trouble," "malaria," "obesity," "rheumatism" and "stomach trouble."

TESTIMONIALS

Some of the testimonials have a serio-comic element in them. There is, for instance, a panegyric alleged to have been written by Lewis G. Spooner, state senator from Minnesota, whose picture adorns the page on which it appears. The senator avers that he considers the J. B. L. Cascade "almighty important to any human being past middle age in life," and he considers that possession of the Cascade and "use of the same is almighty important." Lillian Russell, looking out from a bunch of roses, asks "Professor Tyrrell" kindly to send her "two more Cascades and six boxes of the Antiseptic Powder"; she wants to take them to Europe. Eva Davenport, "of the Yankee Consul Co.," smilingly testifies to the indispensability of the J. B. L. Cascade, which she finds, as a vocalist, "invariably cause clearness and purity of tone," besides being of value "in the reduction of obesity." Anna Held roguishly assures "*Mon Cher* Prof. Tyrrell" that she is delighted with the Cascade"; in fact, she considers "*c'est magnifique!*" One of the latest testimonials purports to be a photographic reproduction of a letter from one Rev. Walter W. Kent, Cincinnati. This testimonial, unlike the others mentioned, is not illustrated —which is a pity. The letter-head explains that Rev. Kent is "Chaplain, First Ohio Infantry, U. S. V. R.," and also "Ex-President, Mount Lookout Business Men's Club." Mr. Kent offers his "testamonial" (spelling original) because he would not withhold it from his friends. "I often suffer with nervous headaches from brain fag, like most literary people and thinkers do," says Rev. Kent. A friendly hint to the reverend gentleman: A fulsome testimonial for a quackish

THE IDEAL SIGHT RESTORER
WE RESTORE SIGHT!
GLASSES RENDER DEFECTIVE VISION CHRONIC.
Write for our ILLUSTRATED TREATISE ON THE EYE, Mailed Free.
THE IDEAL COMPANY, 220 BROADWAY, NEW YORK.

A photographic reproduction (reduced) of an old advertisement of the "Ideal Sight Restorer," another of Tyrrell's devices.

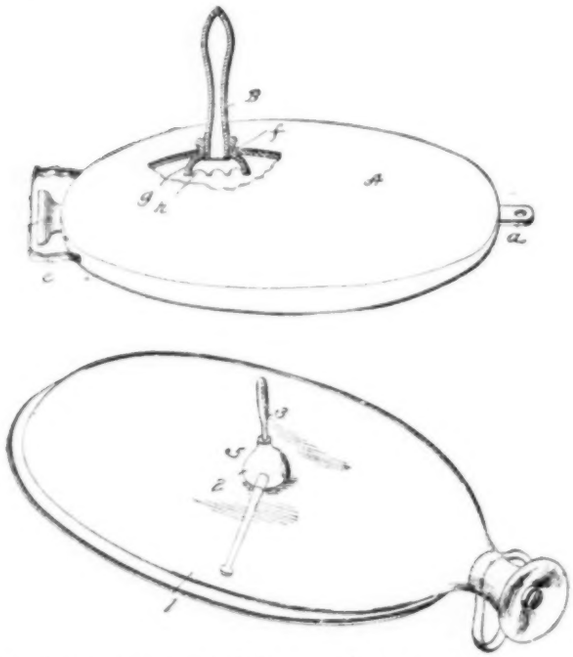
device is not likely to enhance one's reputation for being either "literary" or a "thinker."

Before leaving the subject of testimonials, reference must be made to a list of physicians published by Tyrrell. These men he classes as "distinguished" and "prominent," and claims that they "both use and prescribe" his "treatment." Investigation shows, as might have been expected, that not one of these men can lay claim to being either "prominent" or "distinguished." Professionally, they are nonentities, or worse. Some of them are dead, some are apparently not physicians at all, at any rate their names are not to be found in the official records of physicians, one is an ex-"patent medicine" maker, one has advertised "Obesity, Rupture, Piles . . . Hydrocele and

Varicocele, CURED and GUARANTEED," while others have been commercially connected with Tyrrell and his so-called institute.

THE "PATENT MEDICINE" ADJUNCT

Most concerns that sell mechanical devices of a pseudo-medical nature have a "patent medicine" as an accessory to



Tyrrell claims that the "J. B. L. Cascade" was invented by him. The records of the patent office at Washington show that the device was invented and patented by one H. M. Guild who assigned the patent to the Tyrrell concern. The lower of the two devices illustrated above is the Guild instrument—now sold as the "J. B. L. Cascade"—reproduced from the records of the patent office. Tyrrell claims that the J. B. L. Cascade is "the only thing of the kind ever specially designed for the purpose" for which it is sold, *viz.*, rectal enemas. The upper of the two devices illustrated above was invented by a Canadian who obtained a Canadian patent for the device in 1892 and U. S. patent in 1894.

the alleged treatment. Tyrrell's is no exception. His complete "treatment" consists in (1) the "J. B. L. Cascade," (2) a stick of his "famous Rectal Soap" and (3) a box of the "Celebrated J. B. L. Antiseptic Tonic." The last is the "repeater" part of the "treatment." Tyrrell says regarding the "Antiseptic Tonic":

"This preparation is one of the most important features of the treatment, for it attacks and destroys the microbes of disease in their principal breeding place and I cannot too strongly urge the importance of its use, for the distruction of these germs prevents disease and hastens a cure."

A woman who had received some of the advertising material sent out by Tyrrell wrote asking why the formula of the "Antiseptic Tonic" was not given. Here is what she was told:

"Note your comments as to the Antiseptic Tonic and your inquiry as to why we do not give the formula. We cannot see any good reason why we should do anything of this kind, and give it to the public in order that they may secure the tonic from the druggist without any profit to ourselves for all time."

THE JOURNAL has repeatedly said that the element of secrecy in the "patent medicine" business is for the purpose of allowing the expoiters of nostrums to make claims that the public would laugh at if it was apprised of the composition of their preparations. Tyrrell's "patent medicine" adjunct has been analyzed by the chemists of the American Medical Association. Here is the laboratory report:

CHEMISTS' REPORT ON THE "ANTISEPTIC TONIC"

J. B. L. Antiseptic Tonic is a dirty white, faintly perfumed powder containing small blue particles. A 4-ounce package retails for 50 cents. Dissolved in water it produces a faintly greenish-blue, turbid solution, having an alkaline reaction to litmus. Qualitative tests indicated the presence of a chlorid, a borate, sodium, small quantities of calcium and of a sulphate and traces of a nitrate. Alkaloids, ammonium salts, free boric acid and salts of copper and zinc were absent.

Quantitative determinations indicated that the composition of the specimen examined is essentially as follows:

Sodium chlorid (common salt)	69.9 per cent.
Borax	29.6 per cent.
Calcium sulphate, hydrous (gypsum)	0.5 per cent.
Color and perfume	traces

It seems probable that the gypsum found is not an intentionally added constituent, but that it occurs as an impurity or an adulterant in a cheap grade of borax used in preparing the mixture. The insolubility of the gypsum is responsible for the turbidity of the solution.

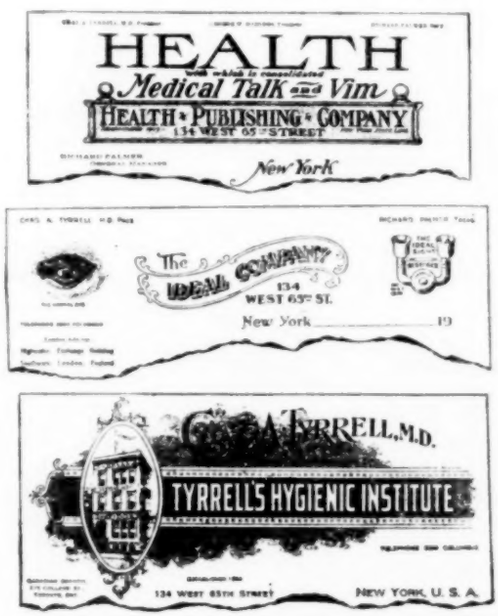
A preparation having all of the "antiseptic" and "tonic" properties of J. B. L. Antiseptic Tonic can be made by mixing 2.8 ounces of salt with 1.2 ounce of ordinary borax at a cost of not to exceed two-thirds of 1 cent.

Here, then, we have 2⅘ ounces of table salt mixed with 1⅕ ounce of borax and sold for 50 cents! No wonder Tyrrell "cannot see any good reason" for giving the public the "formula" for his "Antiseptic Tonic" which "attacks and destroys the microbes of disease in their principal breeding place!"

THE TYRRELL ADVERTISING

We have given this much space to a consideration of Tyrrell's brand of quackery because some publications that, in general, show considerable discrimination in the acceptance of advertisements have sold space to the exploiters of the "J. B. L. Cascade treatment." Correspondence with some of these publications has disclosed an attitude on the subject of quackery that would be laughable, if it were not discouraging. To the magazines in question "patent medicines," as such, are taboo. It seems, however, that if the alleged "cure" happens to be mechanical rather than chemical in nature, it becomes acceptable, no matter how preposterous the claims made for it may be. If the exploiters of the J. B. L. Cascade entirely eliminated from their alleged treatment their salt-and-borax "patent medicine" accessory, euphemistically referred to as "Antiseptic Tonic," there would still be no valid excuse for accepting the J. B. L. Cascade advertising.

The advertisements, "follow-up letters" and other advertising paraphernalia that we have on file, covering several years, show the history of the advertising campaign of the J. B. L.



Photographic reproductions of the letterheads of three concerns of which Tyrrell is, or has been, president. *Health* is the name of a fad magazine, published by Tyrrell, which carried advertisements of various pseudo-medical products including Tyrrell's own devices, the J. B. L. Cascade and the Ideal Sight Restorer.

Cascade to have been one of deceit, misrepresentation and quackery. While some of the most blatant claims have been modified—due, possibly, to previous criticisms from THE JOURNAL—the advertising still misleads, mispresents and deceives by inference where it does not do it directly. In

spite of this, the attitude of certain otherwise estimable publications seems to be that taken by the *Christian Herald*, for example, of New York, which, after having the facts brought to its attention by a physician, wrote:

"We shall continue to carry this advertisement as we are convinced that the system advocated by Dr. Tyrrell is of far greater benefit to the public at large than the medicines prescribed by the average physician."

Summarized, the objections to the exploitation of the J. B. L. Cascade Treatment may be stated thus:

1.—The key-note of Tyrrell's campaign is his alleged theory that "there is only one disease" and that "there is only one cause for disease" and that cause "is auto-intoxication produced by intestinal obstruction." The falsity of these statements and absurdity of the theory are obvious.

2.—A supplementary feature of Tyrrell's "treatment" is the "J. B. L. Antiseptic Tonic," which, it is insisted, is "one of the most important features of the treatment." The "Antiseptic Tonic" is a secret nostrum sold under ridiculously exaggerated claims at an enormously high price. Analysis shows it to consist essentially of a mixture of common salt and borax worth probably two-thirds of 1 cent and sold for half a dollar.

3.—The administration of rectal enemas by means of the J. B. L. Cascade is not only unscientific, but may in many cases be dangerous. The common fountain syringe is both safer and more efficient.

4.—Tyrrell urges the public to take rectal enemas both in sickness and in health—in other words, as a routine part of one's living. This advice is mischievous to the point of viciousness.

5.—Tyrrell misleads the public into believing that prominent and distinguished physicians have approved of and testified to his "treatment." The facts are that not one of the physicians named can, by the widest stretch of imagination, be called prominent and distinguished.

6.—The J. B. L. Cascade is advertised as a veritable cure-all. It is claimed that used in sickness any curable disease may be cured; used in health all disease will be prevented!

Correspondence

Lister on the Use of Animals in Research

To the Editor:—The following letter was found among Lord Lister's papers by his nephew, Sir Rickman J. Godlee (ex-president of the Royal College of Surgeons, England), who is about to publish the authorized Life of Lord Lister. I have his kind permission to publish the letter. It is a signed holograph letter evidently written and revised with unusual care, for there are many changes and corrections in it. It was also evidently copied, for "a line is drawn over it as it was copied," as Sir Rickman informs me. The envelope is endorsed "Rough draft of a letter to Dr. Keen." No copy of the letter ever reached me. Presumably it went astray in the mail. It is of especial interest as showing Lister's deep convictions and personal experience.

W. W. KEEN, M.D., Philadelphia.

12 Park Crescent, Portland Place, London, W.
4 April 1898.

My dear Sir:—I am grieved to learn that there should be even a remote chance of the legislature of any state in the Union passing a bill for regulating experiments upon animals.

It is only comparatively recently in the world's history that the gross darkness of empiricism has given place to more and more scientific practice, and this result has been mainly due to experiments upon living animals. It was to these that Harvey was in large measure indebted for the fundamental discovery of the circulation of the blood, and the great American triumph of general anesthesia was greatly promoted by them. Advancing knowledge has shown more and more that the bodies of the lower animals are essentially similar to our own in their intimate structure and functions, so that lessons learnt from them may be applied to human pathology and treatment. If we neglect to avail ourselves of this means of acquiring increased acquaintance with the working of that marvelously complex machine, the animal body, we must either be content to remain at an absolute standstill, or return to the fearful haphazard ways of testing new remedies upon human patients in the first instance which prevailed in the dark ages.

Never was there a time when the advantages that may accrue to man from investigations on the lower animals were more conspicuous than now. The enormous advances that have been made in our knowledge of the nature and treatment of disease of late years have been essentially due to work of this kind.

The importance of such investigations was fully recognized by the commissioners on whose report the act of Parliament regulating experiments on animals in this country was passed, their object in recommending legislation being only to prevent possible abuse.

In reality, as one of the commissioners, the late Mr. Erichsen, informed me, no single instance of such abuse having occurred in the British Islands had been brought before them at the time when I gave my evidence, and that was toward the close of their sittings.

Yet in obedience to a popular outcry, the government of the day passed an act which went much further than the recommendation of the commissioners. They had advised that the operation of the law should be restricted to experiments upon warm-blooded animals; but when the bill was considered in the House of Commons, a member who was greatly respected as a politician, but entirely ignorant of the subject matter, suggested that "vertebrate" should be substituted for "warm-blooded," and this amendment was accepted by a majority as ignorant as himself.

The result is that, incredible as it may seem, any one would now be liable to criminal prosecution in this country who should observe the circulation of the blood in a frog's foot under the microscope without having obtained a license for the experiment and unless he performed it in a specially licensed place.

It can readily be understood that such restrictions must seriously interfere with legitimate researches.

Indeed, for the private practitioner they are almost prohibitive; and no one can tell how much valuable work is thus prevented.

My own first investigations of any importance were a study of the process of inflammation in the transparent web of the frog's foot. The experiments were very numerous, and were performed at all hours of the day at my own house. I was then a young unknown practitioner; and if the present law had been in existence, it might have been difficult for me to obtain the requisite licenses: even if I had got them it would have been impossible for me to have gone to a public laboratory to work. Yet without these early researches which the existing law would have prevented, I could not have found my way among the perplexing difficulties which beset me in developing the antiseptic system of treatment in surgery.

In the course of my antiseptic work, at a later period, I frequently had recourse to experiments on animals. One of these occurs to me which yielded particularly valuable results but which I certainly should not have done if the present law had been in force. It had reference to the behavior of a thread composed of animal tissue applied antiseptically for tying an arterial trunk. I had prepared a ligature of such material at a house where I was spending a few days at a distance from home; and it occurred to me to test it upon the carotid artery of a calf. Acting on the spur of the moment, I procured the needful animal at a neighboring market; a lay friend gave chloroform, and another assisted at the operation. Four weeks later the calf was killed and its neck was sent to me. On my dissecting it, the beautiful truth was revealed that the dead material of the thread, instead of being thrown off by suppuration, had been replaced under the new aseptic conditions by a firm ring of living fibrous tissue, the old dangers of such an operation being completely obviated.

I have referred thus to my personal experience because asked to do so; and these examples are perhaps sufficient to illustrate the impediments which the existing law places in the way of research by medical men engaged in practice whose ideas, if developed, would often be the most fruitful in beneficent results.

But even those who are specialists in physiology or pathology and have ready access to research laboratories find their work seriously hampered by the necessity of applying for licenses for all investigations and the difficulty and delay often encountered in obtaining them.

Our law on this subject should never have been passed and ought to be repealed. It serves no good purpose and interferes seriously with enquiries which are of paramount importance to mankind.

Believe me
Sincerely yours,

LISTER.

Toxicity of Salvarsan

To the Editor:—The cases here reported seem more serious than those recently reported by Ormsby and Mitchell, and Ellis (THE JOURNAL, Dec. 9, 1916, p. 1756). Our technic has always been carefully controlled, and we follow the procedure recommended by the manufacturer. No ill effects have come to our patients previous to the use of the last two packages of ampules shipped us from New York. Out of the last twenty-three injections of neosalvarsan we have had four cases of severe poisoning and one death.

In the first case, a woman, aged 21, was given 0.6 gm. neosalvarsan; during the injection she suffered intense pain in the extremities and a sensation of choking; two hours later she had repeated convulsions, vomited blood, and had a bowel movement every half hour; the abdominal pain was intense; the pulse, 150; temperature, 104; this continued for forty-eight hours, after which she gradually recovered.

Since this case, we have had three similar, though less severe than the first.

In the last case, Mrs. L., aged 43, suffering from syphilitic gumma, was given 0.6 gm. of neosalvarsan with no marked reaction; eight days later I injected 0.9 gm. of neosalvarsan. An hour later, there came a choking sensation, followed by a chill; three hours later, severe vomiting ensued; then involuntary bowel movements, and agonizing pain in the stomach; the body became extremely livid; this lasted three days uninfluenced by treatment; on the third day, the body became purple, the pulse imperceptible, and eight hours later the patient died.

Since this case, I have learned that several of the specialists in this city have had cases of severe poisoning from the last shipment of this drug.

Dr. G. J. Fields had five cases so severe that he has discontinued the use of either salvarsan or neosalvarsan.

Dr. F. A. Goeltz treated six cases of poisoning, all previously injected with the earlier preparation of salvarsan.

Dr. W. L. Rich reported two very serious cases of poisoning, twelve that had some symptoms of salvarsan poisoning, and eight persons who became only very ill.

CLAUDE L. SHIELDS, M.D., Salt Lake City.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LEAD POISONING FROM Q-BAN HAIR COLOR RESTORER

To the Editor:—I have recently seen a case of lead neuritis following the use of a hair color restorer called "Q-Ban" made by the Hessig-Ellis Drug Company of Memphis, Tenn. Will you kindly inform me as to whether you have any record of such cases, and whether you have an analysis of this preparation showing the amount of lead present?

LESTER ADAMS, M.D.
Eastern Maine General Hospital, Bangor, Maine.

ANSWER.—In May, 1915, Dr. E. B. Markey of Dayton, Ohio, reported untoward effects from the use of "Q-Ban Hair Color Restorer" in two cases that came under his observation. In both cases the victims "developed a moderately severe dermatitis of the forehead, neck and face" following the use of the preparation. "Q-Ban Hair Color Restorer" was analyzed by the Connecticut Agricultural Experiment Station and the results reported in the Annual Report of 1915. According to this report the product had the following composition:

Alcohol by volume	10.46 per cent.
Solids	16.39 gm. per 100 c.c.
Glycerin	11.56 gm. per 100 c.c.
Free sulphur	3.08 gm. per 100 c.c.
Lead acetate	1.68 gm. per 100 c.c.
Oil of rose geranium	present
Salicylates, resorcin, alkaloids	none

The Connecticut chemists, in summarizing the results of their work, said: "This is a perfumed, alcohol-glycerin solution of 1.68 gm. per 100 c.c. of lead acetate, containing 3.08 gm. of free sulphur in suspension. It is simply one of the many familiar lead acetate-sulphur preparations, and its use is by no means free from danger."

TREATMENT OF ARTHRITIS DEFORMANS

To the Editor:—Is there anything worth while, medicinally, in the treatment of arthritis deformans, after such focal infections as tend to causation have been removed? I have a patient, a girl, 21 years old, who has had arthritis deformans for a year; her father has had it for twenty years. It is possible that I have overlooked the recent literature on the latest methods of treatment.

E. F. FISCHER, M.D., Alton, Ill.

ANSWER.—The treatment of arthritis deformans involves a number of factors. There seems to be no question that the initial damage to the joints in many cases is accomplished by infection derived from some focus in the body. Bacterial invasion of joints may be intermittent, so that new joints are successively involved, and exacerbations occur in those previously affected. The source or sources of this infection should of course be sought for and, if found, removed. But when the patient seeks relief, presenting the clinical picture of some one of the types of arthritis deformans, the anatomic changes in the joints, such as the formation of granulation tissue, villous excrescences from the synovial surfaces, the erosion of cartilage, new bone formation about the margins of the articular surfaces, and the relaxation of the joint ligaments are more or less advanced. These changes have resulted not alone from infection, but also from the continued trauma of use acting on injured joint surfaces. It is evident, therefore, that the mere removal of the original cause of these changes cannot appreciably modify the existing lesions of joints, further than to prevent the invasion of new joints. But much can still be accomplished for these patients. It is important to consider the special needs of each. In one instance important joints may have become ankylosed in unusable positions, or their motion interfered with by marginal exostoses. Appropriate surgical treatment will be of service in such cases. Other joints are benefited by immobilization with splints or adhesive tape. Continued infection, pain, and interference with locomotion may have resulted in partial invalidism, with attendant anemia, poor appetite and sluggishness of function of various organs of the body. With the removal of infection and all possible mechanical correction of deformities should go attention to nutrition by giving a well balanced general diet. Tonics containing iron may be of benefit. There is no drug therapy specific for this condition, although some simple form of iron may be of benefit. Outdoor life and such moderate exercise as is consistent with the policy of rest for affected joints will help to build up the general tone of the patient.

INTRAVENOUS INJECTION OF QUININ

To the Editor:—1. Please give the latest technic on quinin administration by the intravenous method.

2. Is it safe to give from 5 to 10 grains of the dihydrochlorid in 1 c.c. sterile saline or distilled water intravenously?

3. Please give the latest technic of quinin administration by the intramuscular method.

Kindly omit name. P. H. C.

ANSWER.—1. The technic of the injection is the same as that of other intravenous injections, such as of neosalvarsan.

2. The formula suggested (from 30 to 60 per cent.) is far too concentrated for intravenous injection. Baccelli, the originator of the method, recommended a 10 per cent. solution. Present opinion, however, regards even this as much too strong. Deaderick ("Endemic Diseases of the Southern States," 1916) recommends a 1 per cent. solution. Recently Witherspoon (*Southern Medical Journal*, December, 1916) reported the results of several injections of 10 grains of dihydrochlorid in 15 c.c. of water, approximately a 5 per cent. solution. Practically all of the patients reacted severely to such injections. The dose which our correspondent mentions is correct. The mixing of the metric and the apothecaries' systems of weights and measures should be avoided; it is apt to lead to confusion.

3. Parenteral administration of quinin is heroic; see "Hypodermic Injection of Quinin," Queries and Minor Notes, THE JOURNAL, Dec. 30, 1916, p. 2030.

THE NATIONAL BOARD OF EXAMINERS—RECIPROCITY

To the Editor:—1. What are the requirements that one must have to take the examination by the National Board of Medical Examiners, or where can I obtain this information? 2. What is the scope of the national board as regards recognition by all the states? 3. Please inform me where I can get a pamphlet or booklet on reciprocity.

Kindly omit name. L. F. P.

ANSWER.—1. Candidates who graduated since 1912 (*a*) must have completed two years of acceptable college work, including physics, chemistry, biology and a modern language, based on a four year high school education; (*b*) must have graduated from a medical college rated in Class A by the American Medical Association, and (*c*) must have spent at least one year in an acceptable hospital as an intern or in a laboratory. For those who graduated prior to 1912 the board may accept equivalent credentials. Further information and application blanks may be obtained from the secretary, Dr. J. S. Rodman, 2106 Walnut Street, Philadelphia.

2. The states in which the boards have thus far announced their willingness to recognize the certificates of the national board are Colorado, Idaho, Iowa, Kentucky, Maryland, New Hampshire, North Dakota and Pennsylvania.

3. Information regarding reciprocity is contained in a book of "Laws (Abstract) and Board Rulings" published by the American Medical Association. The price is 30 cents.

LITERATURE ON INFANTILE PARALYSIS

To the Editor:—It falls to my lot to give a talk on infantile paralysis before a club, and I wish to review some of the latest work done in this line. I would consider it a great favor if you would tell me where I can get this information. M. D., Iowa.

ANSWER.—The following is a list of references on this subject:

Sophian, Abraham: Municipal Control of Infantile Paralysis, THE JOURNAL, Aug. 26, 1916, p. 669.
Ryerson: Operative Treatment of Deformities Due to Poliomyelitis, *Am. Jour. Orthop. Surg.*, February, 1916.
Neal and Dubois: Diagnosis of Poliomyelitis, *Am. Jour. Med. Sc.*, September, 1916.
Mathers, George, and Tunnicliff, Ruth: A Reaction of Immunity in Acute Poliomyelitis, THE JOURNAL, Dec. 23, 1916, p. 1935.
Stern, W. G.: The Prognosis in Infantile Paralysis, THE JOURNAL, July 29, 1916, p. 325.
Flexner, Simon: Note on the Serum Treatment of Poliomyelitis (Infantile Paralysis), THE JOURNAL, Aug. 19, 1916, p. 583.
Lovett, R. W.: A Plan of Treatment in Infantile Paralysis, THE JOURNAL, Aug. 5, 1916, p. 421.
Rosenow, E. C.; Towne, E. B., and Wheeler, G. W.: The Etiology of Poliomyelitis, THE JOURNAL, Oct. 21, 1916, p. 1202.
Nuzum, J. W., and Herzog, Maximilian: Experimental Studies in the Etiology of Acute Epidemic Poliomyelitis, THE JOURNAL, Oct. 21, 1916, p. 1205.

WEIL-FELIX DIAGNOSTIC REACTION IN TYPHUS

To the Editor:—What is the new Weil-Felix reaction? F. E.

ANSWER.—This reaction was described by Weil and Felix in the *Wiener klinische Wochenschrift*, Nos. 2, 28 and 31, 1916, but none of these numbers have happened to reach us. From references to the reaction in periodicals which have come through recently, it seems that Weil and Felix succeeded in isolating from typhus material a proteus-like germ which gives a specific agglutinating reaction with the serum of typhus patients. They cultivated this germ from the urine and blood of typhus patients in a total of thirty-four cases, and never succeeded in cultivating it from other patients. The agglutinins for this reaction do not develop much before the sixth day, but the reaction persists pronounced from then onward until defervescence, when it promptly disappears. No constant connection between this agglutination and the Widal agglutination could be detected, and in diseases other than typhus there is no agglutination with the Weil-Felix technic, or it takes hours to occur instead of the rapid response in typhus. One writer reports that the Weil-Felix strain agglutinated at 1:50 up to 1:1,600 with typhus serum, while there was no agglutination with other patients even at 1:20.

PURPURA HEMORRHAGICA

To the Editor:—1. Please inform me concerning the latest treatment and its results in purpura hemorrhagica.

2. Has autoserum ever been used? If so, with what success?

GEORGE H. SCIARONI, M.D., Sutter Creek, Calif.

ANSWER.—1. Present opinion seems to favor the employment of blood or serum injections in some form for the treatment of this disease. A full discussion of the treatment of this disease will be found in an article by Emsheimer published in THE JOURNAL, Jan. 1, 1916, p. 20. The following are the conclusions of this article:

> The best methods of treatment of purpura hemorrhagica, in addition to the usual measures, are (*a*) subcutaneous or intravenous injection of human blood serum; (*b*) transfusion, and (*c*) intramuscular injection of whole fresh human blood.
>
> The intramuscular injection of whole blood is a simple, harmless, effective procedure, and should be employed before other radical measures in all cases of severe purpura hemorrhagica.

A case successfully treated with horse serum is reported in THE JOURNAL, April 1, 1916, p. 1020.

2. No reports are available of cases in which the patient's own serum has been used.

NINE USEFUL DRUGS

To the Editor:—As a subscriber to your valuable publication I write to know if you have ever published your symposium on "Nine Useful Drugs" as inquired about in your issue of July 22, 1916? If so, when did it appear? EDWARD C. TINGLEY, D.O., Los Angeles.

ANSWER.—Only eighteen replies were received to the original question, hardly enough to make an analysis worth while. We again repeat the question in the hope that sufficient answers, at least 100, will be received. The question follows:

To the Editor:—In my grip which I carry with me I have a case of nine medicine bottles. Would you make a suggestion as to the most useful drugs to carry with me? MORRELL SIMPSON, M.D., ——, Ind.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 9. Chairman, Dr. W. H. Sanders, Montgomery.

CALIFORNIA: Sacramento, Jan. 9. Sec., Dr. C. B. Pinkham, Forum Bldg., Sacramento.

DISTRICT OF COLUMBIA: Washington, Jan. 9. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

ILLINOIS: Chicago, Jan. 24-26. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

INDIANA: Indianapolis, Jan. 9-11. Sec., Dr. W. T. Gott, 120 State House, Indianapolis.

IOWA: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, Feb. 13. Sec., Dr. H. A. Dykes, Lebanon.

NEW MEXICO: Santa Fe, Jan. 8. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.

OKLAHOMA: Oklahoma City, Jan. 9-10. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PENNSYLVANIA: Philadelphia, Jan. 9-11. Sec., Nathan C. Schaeffer, Capitol Bldg., Harrisburg.

SOUTH DAKOTA: Pierre, Jan. 10. Sec., Dr. P. B. Jenkins, Waubay.

VERMONT: Montpelier, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

WISCONSIN: Madison, Jan. 9-11. Sec., Dr. John M. Dodd, 220 E. 2d St., Ashland.

New Mexico July Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Sante Fé, July 10-11, 1916. The total number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. One candidate was licensed by examination; three candidates through reciprocity, and 11 on satisfactory credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Mississippi Medical College		(1912)	78

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University Medical College of Kansas City		(1907)	Kansas
University of Oklahoma		(1913)	Oklahoma
Memphis Hospital Medical College		(1904)	Oklahoma

College	LICENSED ON SATISFACTORY CREDENTIALS	Year Grad.	Total No. Licensed
Atlanta Medical College		(1915)	1
Rush Medical College		(1886)	1
University of Louisville		(1910)	1
Tulane University		(1916)	1
Washington University		(1903)	1
College of Physicians and Surgeons		(1896)	1
College of Phys. and Surg. in City of New York		(1889)	1
Medico-Chirurgical College of Philadelphia		(1910)	1
University of Tennessee		(1916)	1
Vanderbilt University		(1916)	1
University of Texas		(1897)	1

Pennsylvania July Report

Mr. N. C. Schaeffer, secretary of the Pennsylvania Bureau of Medical Education and Licensure, reports the written examination held at Philadelphia and Pittsburgh, July 11-13, 1916. The total number of subjects examined in was 5; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 204, of whom 174 passed and 30 failed. Five candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Licensed
Gross Medical College		(1901)	1
Georgetown University		(1915)	2
Hahnemann Med. Coll. and Hosp., Chicago		(1915)	1
Coll. of Phys. and Surgs., Baltimore	(1914)	(1915, 3)	4
Johns Hopkins University		(1915)	2
University of Maryland	(1914, 2)	(1915, 3)	5
Harvard University	(1915)	(1916)	2
University of Michigan Medical School	(1881)	(1915)	2
Barnes Medical College		(1899)	1
Columbia Univ., Coll. of Phys. and Surgs.		(1914)	2
Fordham University		(1915)	1
Long Island College Hospital		(1915)	1
New York Homeo. Med. Coll. and Flower Hosp.		(1915)	1
Woman's Med. Coll. of the N. Y. Infirmary for Women and Children		(1897)	1
Ohio Medical University		(1907)	1
Western Reserve University		(1915)	1

Hahnemann Med. Coll. and Hosp. of Phila. (1914, 3) (1915, 11)	14
Jefferson Med. Coll. (1875) (1910) (1913) (1914, 4) (1915, 43)	50
Medico-Chirurgical Coll. of Phila. (1914) (1915, 37)	38
Temple University (1915)	12
University of Pennsylvania (1913) (1914, 3) (1915, 13)	17
University of Pittsburgh (1915)	9
Woman's Med. College of Pa. (1915)	5
School of Medicine of Nuevo Leon, Monterey (1882)	1

FAILED

University of Louisville (1912)	1
College of Phys. and Surgs., Baltimore (1914) (1915)	2
Maryland Medical College (1912) (1913, 2)	3
New York Homeo. Med. Coll. and Flower Hosp. (1915)	1
Eclectic Medical College (1915)	1
Jefferson Medical College (1914) (1915, 3)	4
Medico-Chirurgical Coll. of Phila. (1914) (1915, 8) (1916)	10
Temple University (1914) (1915, 2)	3
Medical College of Virginia (1915)	1
McGill University (1915)	1
University of Genoa (1913)	1
University of Naples (1895) (1908)	2

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1884)	Kansas
University of Michigan Homeo. Med. School		(1911)	New Jersey
Western Reserve University		(1912)	Ohio
University of Pennsylvania		(1913)	Ohio
Univ. College of Medicine, Richmond		(1897)	W. Virginia

Hawaii September Report

Dr. R. W. Benz, secretary of the Hawaii Board of Medical Examiners, reports that eleven candidates were licensed at the examination held Sept. 20, 1916. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Licensed
Coll. of Phys. and Surg., Los Angeles		(1915)	1
George Washington University		(1910)	1
Loyola University		(1916)	1
University of Louisville		(1916)	2
Boston University		(1906)	1
Tufts College		(1910)	1
Washington University		(1915)	1
John A. Creighton Medical College		(1916)	1
Kumamoto Special Medical School		(1910)	1
Nagasaki Special Medical School		(1902)	1

Massachusetts September Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, Sept. 12-14, 1916. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 42, of whom 26 passed, including 3 osteopaths, and 16 failed, including 5 osteopaths. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Maryland		(1916)	81.1
Boston University		(1915) 76, (1916) 75, 77.7	
College of Physicians and Surgeons, Boston		(1916) 75.1, 75.6	
Harvard University		(1915) 82.3; (1916) 76.6, 80.3, 80.4, 81.2, 83.5	
Tufts College Medical School		(1915) 75; (1916) 75, 75.6, 78, 78.1	
Albany Medical College		(1915)	77
Columbia University		(1914)	81.3
Cleveland Homeopathic Medical College		(1908)	75
University of Vermont		(1913) 75.3; (1915)	78.3
Dalhousie University		(1915)	77.9

FAILED

Loyola University (1916)	*
Chicago College of Medicine and Surgery (1908) 66.2; (1916)	66.8
Baltimore Medical College (1909)	72
Maryland Coll. of Eclectic Medicine and Surgery (1914)	61.2
Boston University (1915)	68.1
College of Physicians and Surgeons, Boston (1916) 68.2,	69.6, 73
Tufts College Medical School (1913) 70.3; (1916)	71.4

* Did not complete examination.

Wisconsin Reciprocity Report

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports that 7 candidates, including 1 osteopath, were licensed through reciprocity, September 29-30, 1916. The following colleges were represented:

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College		(1914)	Illinois
Chicago Coll. of Medicine and Surgery		(1915)	Illinois
University of Illinois		(1913)	Illinois
Tulane University of Louisiana		(1910)	Louisiana
St. Louis University		(1912)	Missouri
University Medical College of Kansas City		(1903)	Kansas

Book Notices

DYKE'S AUTOMOBILE AND GASOLINE ENGINE ENCYCLOPEDIA TREATING ON THE CONSTRUCTION, OPERATION AND REPAIRING OF AUTOMOBILES AND GASOLINE ENGINES. By A. L. Dyke, E.E. Fifth Edition. Cloth. Price, $3. Pp. 717, with 366 illustrations. St. Louis: A. L. Dyke, 1916.

The motor car has become almost a necessity to the physician—certainly as much so as was the horse and buggy a decade ago. And probably the same proportion of physicians take care of and drive their own machines as formerly drove their horse-drawn conveyance. To take care of and drive an automobile with any satisfaction, it is essential to know at least the general principle of the inner combustion engine and the various mechanical devices which are necessary to transmit the power generated by the gasoline explosion so that it will turn the wheels of the automobile. Dyke's "Automobile and Gasoline Engine Encyclopedia" explains all this in such a clear, simple form that any one will understand it. The book is elaborately illustrated, and the only fault with it—if this could be considered a fault—is the detail in which practically every part of the mechanism and every principle is explained.

SYPHILIS AND THE NERVOUS SYSTEM, FOR PRACTITIONERS, NEUROLOGISTS AND SYPHILOLOGISTS. By Dr. Max Nonne, Chief of the Nervous Department in the General Hospital, Hamburg. Authorized Translation from the Second German Edition by Charles R. Ball, M.D., Chief of the Nervous and Mental Department, St. Paul Free Dispensary. Second American Edition. Cloth. Price, $4. Pp. 450, with 98 illustrations. Philadelphia: J. B. Lippincott Company, 1916.

This is the second American edition, presumably a translation from the third German edition of this work; it is practically the same as previous editions, except that a chapter on salvarsan therapy has been added. The author is essentially a clinician. While the book is really an extensive review of our present knowledge of syphilis of the nervous system, it contains the views of leading neurologists and syphilographers, and covers the pathology very well. The greatest usefulness of the work lies in its value as a guide to the practitioner. With the introduction of salvarsan and of intraspinal injections, the therapy of syphilis of the nervous system has undergone so many modifications that it is entirely impossible for any textbook to present a complete and up to date statement of the present status of the treatment of syphilitic diseases of the nervous system. In this respect the present book perhaps attains all that can be expected of it. As not infrequently happens in later editions, some of the more recent statements need to be harmonized with those in older portions of the text; or, rather, some of the former statements need to be eliminated entirely. While the book is not without some minor defects, it is perhaps quite the best thing in English covering the subject of which it treats. The translator has done his work well, although in places he has not succeeded in getting away from the German idiom, and occasionally is too literal.

I. K. THERAPY (IMMUNKÖRPER, IMMUNE SUBSTANCES) IN PULMONARY TUBERCULOSIS, WITH A SUMMARY OF CASES. By William Barr, M.D., D.Sc., D.P.H., District Tuberculosis Officer for the West Riding of Yorkshire. Cloth. Price, $1.25 net. Pp. 82. New York: William Wood & Co., 1916.

In order to overcome the apathy toward Spengler's Immunkörper therapy, to set forth the benefits that have been obtained therewith, and incidentally to point out mistakes occurring in its use, the author makes this contribution purely on a clinical basis. It is written in a rather generalized form and considers dosage, reactions, suitability of cases for treatment, contraindications, and effects and results of treatment. A summary of the results in forty-seven ambulant cases treated by the author is given. The book is written in extremely simple form, probably with a view to appealing to the general practitioner, and the author is easily misled by the psychology of the patient, as attested by a paragraph on page 52 ending "and, after all, it is the patient who is the final judge" (meaning of the efficacy of the treatment). Only such data as the weight of the patient, the temperature and the amount of sputum are used as criteria in judging the efficacy of I. K.

Social Medicine, Medical Economics and Miscellany

TREPONEMA PALLIDUM AND SPIROCHAETA PALLIDA

From the Standpoint of the International Rules of Zoological Nomenclature

CHARLES WARDELL STILES, M.D.
Professor of Zoology, U. S. Public Health Service,
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THE JOURNAL,[1] Nov. 25, 1916, contained an exceedingly interesting and scholarly article by Dr. Pusey of Chicago, dealing with the nomenclature of the protozoon of syphilis and showing in its composition an elaborate amount of bibliographic study. Copies of THE JOURNAL in question had been in Washington but a few hours when suggestions reached the office of the International Commission on Zoological Nomenclature that the case be discussed from the standpoint of the international rules. The latter fact evidences the point that despite the care with which Dr. Pusey prepared his brief, there are some features of the subject which he did not include in his discussion, and it is in compliance with the suggestions mentioned that the present manuscript is prepared.

Before the nomenclatorial premises are set forth and the rules applied, and to make the general subject clearer to nontaxonomists, it will be well to explain certain differences of opinion as to generic concepts.

THE OLDER AND THE NEWER VIEWS OF GENERIC LIMITS

Workers in systematic zoology and systematic botany may be divided into two general classes: those who favor broad genera with many species, and those who favor small genera with fewer and very closely allied species. The former are known as the "lumpers," because they "lump" many species into one generic group; the latter are called "splitters," because they split up the genera into small and allegedly more homogeneous groups.

For instance, a "lumper" might consider that all of the tapeworms possessing four suckers should be placed in one and the same genus, *Taenia*, while a "splitter" would recognize *Taenia* (for species of the type of *T. solium*), *Hymenolepis* (for species of the type of *T. diminuta*), *Dipylidium* (for species of the type of *T. canina*), *Davainea* (for species of the type of *T. proglottina*), etc. Or, to take another example, a "lumper" of the old school might unite the field mice, the house mouse, the rats, and the guinea-pigs in the genus *Mus*, while a "splitter" of the newer school would consider that the rats are much more closely related to each other and to the house mouse than they are to the field mice and the guinea-pigs; accordingly he would express this evolutionary or blood relationship by dividing the old genus *Mus* into a number of genera, and by uniting these genera into subfamilies, families, superfamilies, etc., in order to give what he calls a "natural" as distinguished from an "artificial" classification. Thus, a genus, from the standpoint of a "lumper," might be a family or even a superfamily from the standpoint of a "splitter."

These two points of view are determined by two factors in particular: first, by different opinions as to whether given anatomic characters are of specific, subgeneric, generic, or supergeneric value, and, second, by the existing knowledge, in any given decade, in respect to the details of the anatomy of the different species.

The second factor mentioned, increase in anatomic knowledge as years advance, has a natural tendency to cause later systematists to divide and subdivide the genera of earlier authors. The first factor, different opinion as to the classificatory value of various characters in respect to formation of systematic units of higher or of lower rank, is dependent on several points, notably, however, on the fact as to whether an author has studied a relatively small number or a relatively large number of different organisms of various groups, and, further, on the fact whether his special training has been on the taxonomic side or on the biologic side of these organisms.

In harmony with the foregoing generalizations, it may be expected that medical authors (who have to deal with relatively few different kinds of organisms) will be predisposed to become "lumpers," as were the earlier zoologists and earlier botanists, while modern systematic zoologists and modern systematic botanists (who have to classify a very much greater number of organisms) will show a predisposition to array themselves on the side of the "splitters."

These conditions are inevitable in science and must be accepted with equanimity. That the entire tendency in taxonomy today is, and for more than half a century past has been, toward the point of view of the "splitters" will be evident to any person who studies nomenclature extensively. That medical literature is and always will be from five to ten years back of zoological and botanic literature in admitting and adopting the finer points of generic concepts in zoology and botany seems equally clear.

Applying these generalizations to *Spirochaeta* and *Treponema*, a "lumper" would unite a large series of free-living and parasitic forms in the old genus *Spirochaeta*, while a "splitter" would divide these organisms into several groups (genera), at the same time uniting into each of the restricted genera the species which he considers most closely related to each other. In these differences of opinion it is natural to expect that the tendency of the medical authors will be toward the point of view of the "lumpers," while that of the zoologists (as illustrated by Schaudinn) will be toward the point of view of the "splitters."

THE NOMENCLATORIAL DIFFICULTIES

Dr. Pusey, in his interesting and learned article, practically takes the point of view characteristic of a number of authors, namely, that the choice between two names is to be determined by the preponderance of the use of one or the other of these names. This view is not entirely in harmony with that held by the vast majority of systematists, who are the authors on whom the greatest burden of systematic names falls. As zoologists are obliged to handle hundreds of thousands of systematic names, and to keep them as clear as possible despite the change of views in respect to classification from one decade to the next, the zoological profession has seen itself forced to formulate rules for guidance in accepting, changing, and rejecting names. For a number of years different countries had different sets of rules, but finally the International Zoological Congresses have succeeded in establishing a series of international rules which are under the care, so to speak, of an international commission of eighteen professional zoologists selected from various countries. These commissioners are elected in three classes of six men each. Each class serves nine years, and the term of one class expires every third year. The international rules are published in English, French, German, and Italian, and the "Opinions" of the commission are published by the Smithsonian Institution.

It is an undeniable fact that not every zoologist considers himself bound by these rules, as it is also a fact that not every physician considers himself bound by the medical code of ethics; but the rules have been adopted by the International Congress, and thus they are the formal expression of opinion of the organized zoological profession.

As a legalized practitioner of medicine, I would submit the claim that if a physician calls into consultation a zoologist, the latter becomes for the moment a quasimember of the medical profession, and in matters concerning the patient this zoologist is bound by the code of ethics as adopted by the organized medical profession.

Conversely, as a professional zoologist, I would submit that when a physician enters the field of zoological nomenclature he should consider himself subject to the rules as adopted by the organized zoological profession, rules that have been established for the good of all persons concerned.

1. Pusey, W. A.: Spirochaeta pallida or Treponema pallidum? THE JOURNAL A. M. A., Nov. 25, 1916, p. 1621.

THE NOMENCLATORIAL PREMISES IN THE CASE OF TREPONEMA PALLIDUM AND SPIROCHAETA PALLIDA

In considering competitive names we must first have before us certain premises, in particular the dates of publication and the genotypes (or type species) for the genera under consideration.

The dates of publication are important when it comes to the application of the law of priority.

The expression "genotype" or "type species" is relatively little known in medical literature, and must therefore be explained.

There have been about 1,500 or more specific names used with the generic name *Taenia* since 1758. Assume that we wish to divide the numerous species, thus represented, into ten or into 100 more restricted genera, the question immediately arises as to where the name *Taenia* belongs. Every generic name is supposed (theoretically) to be based on a single species, its nomenclatorial genotype or type species, and if the genus is divided the original name goes automatically to that subdivision which contains the type species (namely, *Taenia solium* for the generic name *Taenia*), so that no matter how differently authors may classify the various species, every author is obliged, under the rules, to apply the name *Taenia* to the restricted group to which he assigns *Taenia solium*.

The points which come into consideration in determining which species is genotype for a given generic name are elaborately worked out in Article 30 of the international rules.

The nomenclatorial premises for the case now under consideration are as follows:

In 1834, Ehrenberg proposed *Spirochaeta* as a new genus, basing the same on the single species *S. plicatilis*, described in the same paper, with Berlin, Germany, as its type locality, where it is a free-living organism in water. Article 30 (*c*) reads: "A genus proposed with a single original species takes that species as its type. (Monotypic genera)." Accordingly, *S. plicatilis* is the genotype of *Spirochaeta*.

In 1841, Dujardin changed the spelling of the generic name to *Spirochaeta*, and in 1872, Cohn changed it to *Spirochaete*. Both of these new modes of spelling are known as "variants," and they are dependent on the same type species as the original name *Spirochaeta*.

From 1834 to 1905, a considerable number of minute spirochete-like organisms were described by various authors, who placed the species in question in the genus *Spirochaeta* 1834. This was a perfectly proper procedure from the point of view that their major characters were identical with the characters interpreted as major characters of *S. plicatilis*. As the genus grew in size by the addition of various organisms, it became evident from the point of view of certain authors that what had been interpreted as major generic characters were probably characters of supergeneric (as family) rank, and in accord with this view several authors have selected certain species which were included by earlier writers in the genus *Spirochaeta*, have designated them as type species of new genera, and have assembled around these type species other species which they consider more closely related to the respective genotypes than to *S. plicatilis*.

Vuillemin, for instance, June 5, 1905, proposed the new genus *Spironema*, basing it on *Spirochaeta pallida*. Vuillemin was not aware of the fact that the name *Spironema* had been given in 1864 to a genus of mollusks.

Article 34 of the International Rules reads as follows:

> A generic name is to be rejected as a homonym when it has previously been used for some other genus of animals. Example *Trichina* Owen, 1835, nematode, is rejected as homonym of *Trichina* Meigen, 1830, insect. (See "Opinions" 12 and 19.)

According to Article 34, just quoted, *Spironema* 1905 is an absolute homonym of *Spironema* 1864, and is automatically rejected on this account.

Schaudinn noticed that the name of *Spironema* 1905 was not available under the rules, and he proposed the name *Treponema* as substitute, basing the name on the species *Spirochaeta pallida*. The name *Treponema* was published, Oct. 26, 1905.

Stiles and Pfender, also, independently of Schaudinn, noticed that *Spironema* 1905 was preoccupied by *Spironema* 1864, and they published, Dec. 2, 1905, the new generic name *Microspironema*, basing it on *Spirochaeta pallida*. The law of priority, namely, Article 25 of the international rules, reads as follows:

> The valid name of a genus or species can be only that name under which it was first designated on the condition (*a*) that this name was published, and accompanied by an indication, or a definition, or a description; and (*b*) that the author has applied the principles of binary nomenclature. (See "Opinions" 1, 2, 4, 5, 9, 10, 12, 13, 15-17, 19-21, 24, 28, 37-40, 46, 49-54, 56.)

Accordingly, *Microspironema* of Dec. 2, 1905, automatically falls as an absolute synonym of *Treponema* of Oct. 26, 1905.

It now remains to consider *Spirochaeta* 1834 and *Treponema* 1905. As shown in the foregoing, *Spirochaeta* 1834 has for its genotype a free-living organism (*S. plicatilis*), while *Treponema* has for its genotype an obligatory parasitic organism (*T. pallidum*), with man as the type host. These two organisms differ in certain anatomic, physiologic, and biologic characters.

We now have a very clear cut and simple nomenclatorial proposition before us, but the decision finally rests on the point whether we are "lumpers" or "splitters."

If we belong to the "lumpers" and hold that *Treponema pallidum*, an obligatory parasite, is congeneric with *Spirochaeta plicatilis*, a free-living organism, it is incumbent on us, under the rules, to express our view on the classification by the nomenclature we use, and thus to adopt the name *Spirochaeta pallida*.

If, on the other hand, we belong to the "splitters," and hold that the spirochetes represent a heterogeneous mass of species which in the interest of clarity of classification should be assembled into more restricted and more natural generic groups, it is incumbent on us to confine the name *Spirochaeta* to organisms showing the major characters of *S. plicatilis*; *Cristispira* to organisms showing the major characters of *S. balbianii* and *S. anodontae*; *Treponema* to those showing the major characters of *S. pallida*; *Spiroschaudinnia* to those showing the major characters of *S. recurrentis*, and so on through all of the restricted groups we wish to recognize.

Thus, not entirely in harmony with the view expressed by Dr. Pusey, namely, that authors who use *Treponema* do so out of deference to the memory of Schaudinn, these authors are in reality "splitters," who are acting entirely in accord with the international rules.

The practical question remains as to what course is best for an author who prefers not to express an opinion on the strictly taxonomic side of the problem.

Several courses are open to him:

1. He may adopt either name and quote the other in parentheses, as *Spirochaeta pallida* (*Treponema pallidum*) or *Treponema pallidum* (*Spirochaeta pallida*). It will suffice if he gives either of these double citations only once in his article, namely, the first time he mentions the technical name. After that he will do well to use consistently either the one or the other, but not both binomials.

2. He may use either name, explaining in a footnote that he does not commit himself to any taxonomic interpretation.

3. He may take an intermediate position between the "lumpers" and the "splitters" by recognizing *Treponema* as a subgenus of *Spirochaeta*, and in this case he writes: *Spirochaeta* (*Treponema*) *pallida*.

POSSIBLE COMPLICATION OF BIOLOGIC DATA

There is a point, however, which it is wise for authors to recall. In discussing biologic data, as in life histories, cultural methods, etc., it is much more difficult to separate data which are confused under one generic name than to unite data which are well defined under two generic names. Farsightedness lies in keeping biologic data as distinct as possible. Applying this principle to taxonomic units, the more progressively conservative plan is to adopt restricted rather than broad units if one is in doubt as to the name to be used. Specifically, if the biologic data concerned in *Treponema pallidum* become confused with the biologic data involved in *Spirochaeta plicatilis*, it will, in all probability, be very much more difficult later to divide the data between *Treponema* and *Spirochaeta* if both are classified now as congeneric than if they are now classified as generically distinct, for the

reason that many authors, in discussing these data, will use the name "spirochetes" instead of the specific names *S. plicatilis* and *S. pallida*, and as one author quotes from another, year after year, confusion will increase in this case as it has in other cases.

From this point of view, even if from no other, it appears more far-sighted to adopt at present the name *Treponema* for *T. pallidum*.

As this article is intended simply to present the nomenclatorial points at issue, I refrain from entering into a discussion of the more strictly zoological points as to the characters which have induced certain zoological authors to recognize *Treponema* as of generic rank, distinct from *Spirochaeta*.

I believe, however, that it is entirely consistent with the nature of the discussion to add that my experience in zoological nomenclature, not only as a systematist, but especially as a member of the International Commission since 1895, has thoroughly persuaded me of the wisdom and conservatism (from the point of view of the future) of using restricted generic groups in preference to larger heterogeneous genera, and that in case of doubt it is, in general, the better course to accept a restricted generic name, especially when discussing its genotype.

For instance, if I were seriously in doubt as to whether *Treponema* should be considered generically distinct from *Spirochaeta*, I should accept *Treponema* for *T. pallidum* and its closest allies, on the practical ground that this course is much less likely to result in later confusion in respect to biologic and bibliographic data in case subsequent work proves to the satisfaction of the "lumpers" that *Treponema* should be recognized as distinct from *Spirochaeta;* but I should, in that case, quote *Spirochaeta* at least once in my article in a way to indicate to systematists that I was aware of the difference of opinion which exists among authors.

The case under discussion is not unlike that of *Endamoeba histolytica*. A "lumper" might consider *Amoeba histolytica* congeneric with *A. limax, A. proteus,* etc., but a "splitter" would consider it more exact and more practical to recognize *Endamoeba histolytica* and *Vahlkampfia limax* as generically distinct from *Amoeba proteus* (*seu Chaos chaos*).

The question whether the literature of any particular group of men uses *Amoeba* or *Endamoeba* would not be the determining factor in the nomenclature of the group.

From the foregoing it will be clear, I hope, that the question of sentiment is not recognized by the international rules.

In his last paragraph, Dr. Pusey says, "If the best usage means anything, *Spirochaeta pallida* is an acceptable term for the organism of syphilis." In this connection it may, however, be pointed out that our conception as to what is best usage depends largely on the question whether we are "lumpers" or "splitters." Best usage from the point of view of the splitter is that usage which comes closest to expressing a natural classification of the organisms, and this is a question which will eventually be based on consensus of opinion by taxonomists who deal with large numbers of organisms, both free-living and parasitic.

If it can be shown that it "will produce greater confusion than uniformity" to use *Treponema* instead of *Spirochaeta*, it would be within the power of the International Commission to suspend the rules in this case and to apply *Spirochaeta* to the treponemes, instead of to the spirochetes typified by *S. plicatilis*, even if authors universally agree that *S. plicatilis* and *T. pallidum* are not congeneric; but unless it can be shown that the application of the rules will produce greater confusion than uniformity, authors who consider *T. pallidum* generically distinct from *S. plicatilis* have no argument which would justify them in continuing to use *Spirochaeta pallida* in place of *Treponema pallidum*.

SUMMARY

1. Any author who considers *Spirochaeta plicatilis* congeneric with *Treponema pallidum* is expected to express this view in his nomenclature by using *Spirochaeta pallida* as the name for the organism of syphilis.

2. Any author who considers that *Treponema pallidum* is generically distinct from *Spirochaeta plicatilis* is expected to use the name *Treponema pallidum*.

3. This is not an editorial question, but one of nomenclature based on taxonomic concepts, and it will be finally settled on the basis of ultimate consensus of opinion by systematists as to the generic limits of *Spirochaeta*, type *S. plicatilis*.

4. In case of doubt, and pending final settlement, it is clearly better, in order to keep biologic data as distinct as possible, to follow Schaudinn in using *Treponema* as generic name for the organism of syphilis. The use of *Treponema pallidum* precludes confusion; the use of *Spirochaeta pallida* need not necessarily result in confusion, if all authors quote the specific as well as the generic name, but it invites confusion because so many authors shorten the technical name to "spirochetes."

5. A position intermediate between the "lumpers" and the "splitters" may be taken by recognizing *Spirochaeta* as a genus containing certain subgenera (*Spirochaeta* s. str., *Treponema*, etc.). If this intermediate position is preferred, the proper citation of the organism of syphilis would be *Spirochaeta* (*Treponema*) *pallida*.

6. If a vernacular name is desired for *Spirochaeta* (*Treponema*) *pallida*, "treponeme" is likely to keep biologic data differentiated more clearly than will the name "spirochete."

[Dr. Pusey's discussion of Dr. Stiles' reply will appear in this department next week.]

Practical and State Medicine

In his address to the students at the opening of the medical school of the University of Michigan in October, 1916 (*Science*, Dec. 8, 1916, p. 799), Prof. Victor C. Vaughan in expressing his views of the needs of the present and of the future of practical medicine, said:

The greatest need of practical medicine today is more and better equipped hospitals. With these the specialist and the skilled nurse will multiply and improve. Such hospitals should be supplied with thoroughly equipped and competently manned diagnostic laboratories which should serve not only curative but also preventive medicine. Water and milk supplies should be examined daily, and visiting nurses under the direction of a competent health officer should constantly patrol the community. Adjunct dispensaries which should serve as schools of instruction in baby feeding and care, child welfare, home sanitation and everything pertaining to healthy living should supplement the community hospitals. When in addition to these agencies the people generally can be educated to see the benefits that would follow the periodic thorough examination of all in order to detect the first departure from the normal, then medicine will be able to render its highest service to mankind.

It must be evident that if these hopes are to materialize, the practice of medicine must become more and more a state function. That the tendency is in this direction, and that this should be encouraged for the public good, are not matters of doubt in my mind. Only a few years ago some of the most eminent men in the profession combated earnestly state support of medical education. They claimed that the state had no right to establish and maintain medical schools, and that such aid was not fair in competition with the proprietary schools, which at that time educated more than 90 per cent. of the annual recruits to the profession. Now, no one questions either the right or the duty of the state to establish and support medical schools, while the proprietary schools, having proved wholly inadequate and inefficient, have practically ceased to exist. Even the man in the street sees the advantages which have resulted from these changes. To state that a medical school is a proprietary one, in the sense generally understood by that term, immediately condemns it with intelligent men. Courts from the lowest to the highest in the land have uniformly held that the state has the right to maintain its own medical school, and also to pass on the merits of other schools both within and without its borders, to set up standards of medical education, to define the requirements of admission to medical schools, to submit those who wish to practice within its borders to certain intellectual and moral tests in order to pass on their professional fitness, and to revoke the licenses of the unworthy.

Medicolegal

There Must Be Some Imprisonment for Illegal Practice — As to Residence

(Rutherford vs. State (Texas), 187 S. W. R. 481)

The Court of Criminal Appeals of Texas reverses a judgment against defendant Rutherford, who was convicted of unlawfully practicing medicine and his punishment assessed at a fine of $100. The reason given for this reversal and remanding of the cause is that Article 756 of the Penal Code of Texas provides that the punishment for unlawfully practicing medicine shall be by fine of not less that $50, nor more than $500, and by imprisonment in the county jail for any period of time not exceeding six months. It is thus seen that the legislature has fixed some imprisonment as a minimum punishment the jury can assess. The punishment assessed must be always within the minimum and maximum fixed by law. This court, and no other court in the state, can assess a punishment that the law does not authorize.

Another thing should be mentioned. While the trial court did not err in overruling a motion to quash the indictment on the grounds presented in the motion, yet the court of criminal appeals thinks that on another trial the indictment either should allege and the proof show that the defendant was temporarily residing in Johnson County if such was the fact; or if this was not the fact, then, as it was alleged that his residence was unknown, the indictment should not only allege that he had not recorded a certificate authorizing him to practice in Johnson County, but should further allege that he had no certificate authorizing him to practice, and proof that he had recorded no certificate would be prima facie proof that he had none by virtue of the statute.

Sufficiency of Complaint and Validity of Provisions of Medical Practice Act

(Piper vs. State (Wis.), 158 N. W. R. 319)

The Supreme Court of Wisconsin, in affirming a conviction of Defendant Piper of practicing medicine without a license, holds that the complaint did not fail to state an offense and was not fatally defective because it did not set forth the classes of medical and surgical practitioners exempted from the law. The exemptions specified by Section 1435d, Statutes of 1915, are in a separate section, and need not be specified in the complaint. These are defensive matters. Nor was the complaint defective because it charged the commission of the offense on "information and belief."

It was contended that the provisions of Section 1435, Statutes of 1913, arbitrarily attempt to define what is to constitute the practice of medicine and surgery, and condemns practices which do not, in substance, constitute the practice of medicine and surgery, and hence deprive persons of rights guaranteed them by Section 1, Article 14, of the federal constitution, and Sections 5 and 11, Article 1, of the state constitution. The defendant claimed on this point that the provisions of Section 1435f, Statutes of 1913, penalizing all persons who shall append to their names the words or letters "Doctor, Dr., Specialist, M.D., D.O., or any other title, letters, combination of letters or designation which in any way represents him or her, or may tend to represent him or her, as engaged in the practice of medicine, surgery or osteopathy in any of its branches, or who shall for a fee or for any compensation of any kind or nature whatsoever, prescribe or recommend for like use any drugs or other medical or surgical treatment or osteopathic manipulation, for the cure or relief of any wound, fracture, bodily injury, infirmity or disease. . . ." are an arbitrary and unlawful classification as medical and surgical practitioners of persons who are not necessarily engaged as such practitioners, and thus deprives them of the liberty to do these things, contrary to their constitutional rights. The contention overlooked the provision that the use of the words or titles so appended to a name is denounced by the law whenever they represent, or tend to represent, the person as a practitioner or medicine, surgery or osteopathy, or if he as such a practitioner does anything by way of treatment or gives a prescription for a fee. All the prohibited acts are limited to persons who in fact do these things as practitioners of medicine, surgery or osteopathy. When so applied, these regulations have been repeatedly held to be within the legislative power. The court discovers nothing in these provisions which conflicts with the right of trial by jury in cases arising under the law. The statute is a proper one for the regulation of the practice of medicine, surgery or osteopathy, and the provisions accomplish this purpose in a reasonable way.

Requisites to Making Married Woman Liable for Medical Services for Son

(Davenport vs. Rutledge (Texas), 187 S. W. R. 988)

The Court of Civil Appeals of Texas, in reversing a judgment obtained by the plaintiff in this case on account for services rendered by him as a physician to the defendant's minor son, who had been injured by a railroad, says that at the time of the alleged services the defendant's husband was alive, and he and the defendant were living together as husband and wife. The child was their offspring, living with them. In order to make the defendant—the wife—personally responsible for the services, she must have entered into a contract with the plaintiff for services rendered necessary to her child. If there was no such contract, and she only acquiesced or consented for the physician to treat the child, this would not bind her personally or make her separate property liable. It is not sufficient that she merely give an order or call in a physician, for in such case the presumption is that she does so as the agent of her husband, whose duty it is to supply such things. After the services were rendered, a mere verbal promise on her part to pay would not render her separate estate liable for the debt of the community, as it is called. She would not be bound personally for the default of her husband by such verbal promise to pay his debt. If the testimony of such verbal promise was admissible at all, it was admissible only as a circumstance on the question whether she contracted for such services in the first instance. A liability could not be founded against her on such verbal promise, made after the debt accrued, and if the judgment reversed was based on such promise, it was erroneous and without legal testimony. Her mere acquiescence or consent for the physician to treat her child would not support the judgment.

Society Proceedings

AMERICAN SOCIAL HYGIENE ASSOCIATION, CENTRAL STATES DIVISION

Joint meeting with Chicago Women's Club, Woman's City Club and Chicago City Club with the Chicago Medical Society participating, held at Chicago, Dec. 14, 1915

DR. WILLIAM T. BELFIELD, Chicago, in the Chair

SYMPOSIUM ON SYPHILIS

The Campaign for Social Hygiene

DR. WILLIAM T. BELFIELD, Chicago: Fifty years ago personal liberty assured to every one the right to contract scarlet fever and diphtheria and scatter it among his fellows without interference by law. The city did, however, recognize the duty of seeing that the remains were decently interred. Today personal liberty assures to every one the right to contract syphilis or gonorrhea and to communicate it to his intimates, or to his bride or to his unborn children without interference by the law. It does, however, recognize the duty to see that the remains are decently interred in the asylums for the insane, for the feebleminded, for the blind, in penitentiaries and in poorhouses, all of which derive a considerable percentage of their rapidly increasing population from the venereal diseases. Illinois spends every year millions in mopping up the floor, but forgets to turn off the faucet. Since the disasters wrought by syphilis, civic, economic and vital, are greater than those caused by scarlet fever in its community cost, syphilis is obviously the more important;

but the public, for evident "reasons," refuses to employ against syphilis the effective measures that have long been used against scarlet fever, including compulsory notification and quarantine. The proposed ordinance now in the hands of the health committee of the Chicago council carefully excludes these two features.

I am convinced that the campaign for social hygiene in this country has been worth while, for it is generally conceded now to be not a new phase of religious mania, but the earnest effort of intelligent people to stem the tide of mental and physical degeneracy which is even now painfully apparent in our population. Some states compel every male applicant for a marriage license to present a certificate of freedom from venereal disease, and in other less progressive states like Illinois, multitudes of fathers demand the same assurance before giving up their daughters. The dean of a large educational institution recently said that among 5,000 students the number acquiring venereal diseases had in five years dropped from about 18 to less than 2 per cent.

No man contends that knowledge of venereal diseases will alone restrain young men from contracting them; but some of us do believe that this knowledge will reduce—indeed, has already reduced—the contamination of wives and children with these infections, and that, as it seems to me, should be the slogan of the entire social hygiene movement. Keep the infection out of the family and out of the stock, and confine it, so far as may be, to those who voluntarily expose themselves.

What Should Chicago Do for the Venereally Diseased?

DR. WILLIAM A. PUSEY, Chicago: It is a fair statement that there are in this country at least 5 per cent. of syphilitics among the adult population. I am not so familiar with the figures as to gonorrhea, but 20 per cent. would probably be well within the figures. Three methods of handling contagious diseases are: (1) control of the routes of communication; (2) restraining the liberty of the infected person until the danger is past, and (3) control of the infectious disease as quickly as possible, thus rendering patients free from danger to others. These methods are potentially applicable to the venereal diseases.

Several methods attempt to control the diseases indirectly: the inculcation of clean living, sexual restraint, high moral standards, the regulation or repression of vice, and the control of the liquor traffic. These methods only scratch the surface. In large measure, they appeal only to the intelligent, the careful and the conscientious. I confess to feeling hopeless as to the control of these venereal diseases by these indirect methods. We immediately come in contact with the insistent force of the sexual appetite, against which indirect methods are in large part futile. I do not minimize their importance and would not like to see a falling off in that feature of the crusade, but I believe that if we are to control venereal diseases we shall have to control them as diseases and not as moral problems. In my judgment, control by isolation and quarantine is impossible in disease so widespread and contagious over so long a period.

We are therefore reduced to the third method of attack. Fortunately the medical profession is particularly well qualified to do this as regards venereal diseases; better as regards syphilis than any other infectious disease, and able to do a great deal in gonorrhea by controlling its infectiousness. This puts us in position to act against them as public menaces, and justifies the establishment of means for taking care of these patients. Medical institutions, hospitals and dispensaries are already doing it, but lack the equipment and support for effective work.

The ideal condition would be to provide universal opportunity for treatment and, I would add, compulsory treatment. The essentials of such a crusade would be the organization of dispensaries and small hospitals for this purpose. Such institutions should be well manned and equipped for diagnosis and treatment. A social service and follow-up service is essential. There should be also free and easy access to these dispensaries without embarrassing restrictions.

Dispensaries should have evening hours, so that patients may attend without sacrificing time from their work. Such facilities should be free to the abject poor, but should also have provisions as to those able to pay small fees.

The proposition as to the notification of venereal diseases sounds plausible in the abstract, but it is exceedingly difficult in the concrete, and in my opinion gets us nowhere. It does not even give us statistics, and it is not necessary to have statistics to prove the menace and the prevalence of the venereal diseases. Such statistics, as now provided for in eleven states, are notoriously unreliable and would be laughed out of any court. Likewise isolation is impracticable for the 20, or even 10 or 5 per cent. of the productive adult population of Chicago with venereal diseases which last so long a time.

What the Chicago Health Department is Doing for the Venereally Diseased

DR. F. O. TONNEY (Director, Municipal Laboratory), Chicago: In 1910 a venereal clinic was established in the Iroquois Hospital, and the health department began to accept specimens for examination by the Wassermann reaction and for gonorrhea, collected from charity patients. At present no venereal clinics are being operated by the department of health, although specimens for laboratory tests are being collected daily.

The health department has always endeavored to do educational work. The morals commission constitutes the chief agency of publicity, and since its establishment in 1914 has collected and disseminated many valuable data. The functions of the commission are: to study all phases of sexual immorality and practices which tend to promote or restrict them, or which concern the physical and moral welfare of the inhabitants of the city with a view to their suppression; to study measures to rehabilitate prostitutes, to study prostitution and the venereal diseases, and take the legal action necessary to suppress houses of prostitution; to prosecute the owners, keepers and inmates of such houses; to advise the prosecuting attorney and chief of police in relation to such matters, and to make reports of their findings to the mayor and the council and recommend legislation necessary to secure these objects. The work of the morals commission is exemplified in their reports relating to conditions in dance halls and places of amusement. While this secures publicity, it does not relate specifically to venereal diseases and does not form data for a campaign against such diseases. In 1915 out of a total of 221,433 examinations by the board of health laboratory, there were 106,400 Wassermann tests and 347 for gonorrhea. Although the laboratory has sufficient space, it must have more bacteriologists before free general service can be offered. For treatment there are only the dispensaries of the medical schools and hospitals.

The ordinance provides for report to the commissioner of health by number cases of venereal diseases by physicians and institutions having to do with such cases, giving information as to the danger of such persons to others. They shall also distribute circulars of instruction for the prevention of the transmission of such diseases, and shall report such fact to the commissioner of health.

Status of Chicago's Hospital and Clinical Facilities for Diagnosis and Treatment of Venereal Diseases

DR. OLIVER S. ORMSBY, Chicago: I limit my remarks to what is being done in the treatment of syphilis in the dermatologic department of the Central Dispensary of Rush Medical College. The older methods were simple, consisting of the use of mercury by mouth, by injection or by inunction, and the employment of potassium iodid, all of which methods, except the injections, could be carried out by the patient. The present methods of treatment require more equipment, more time and more money, but the results warrant these. At the dispensary we employ salvarsan, with the proper apparatus to demonstrate the spirochete, and have a laboratory for Wassermann tests with a worker to make the tests and administer the salvarsan. At present this man makes the blood tests in the morning and assists with the treatment in the afternoon. Treatment is necessarily controlled by the blood and spinal fluid tests, and it is therefore necessary to have facilities for making these tests. The department has

had some assistance from the social service department, and later will have one worker devoting whole time to the work. The treatment is given in courses, five salvarsan injections and from twelve to twenty-four mecurial injections, controlled by the Wassermann reaction. The treatment depends on the stage of the disease. By this method the patients are kept under control better and are given a better chance to recover, and their relatives are better protected from infection. They get the same treatment as private patients. From the standpoint of public health the infectious cases are cleared up, preventing the spread of the disease. By having a social service others are protected, and associated patients are urged to take treatment. The worker also ascertains whether or not they are entitled to free treatment. Children are sometimes brought in who have been accidentally infected, and other members of the family may then be found to be infected. Those with active lesions in the mouth and other localities are soon rendered safe to go among their fellows; otherwise the danger would exist for several weeks. Contributions have enabled the dispensary to do this work, along with the efficient work of the superintendent and the cooperation of the department. Patients of the dispensary class are apt to neglect treatment. When the treatment is carried out as outlined, the patients realize the importance of regular attendance and lend their cooperation.

DISCUSSION ON SYPHILIS

DR. HUGO BETZ (Superintendent, Iroquois Emergency Hospital) Chicago: After we find cases positive there is no recourse for them whatever as to treatment. The health department at present is not able to take care of all the patients sent to them because of lack of appropriations.

DR. L. W. BREMERMAN, Chicago: The work at the Central Free Dispensary is excellent, but there are many other free dispensaries in Chicago at which venereal diseases are scientifically treated, while many have meager or no proper equipment. I think the trouble with the dispensaries for the treatment of venereal diseases is that they are run at the wrong time of day. Dr. Pusey's suggestion of night clinics is excellent. One fault with the dispensaries is that patients are not properly instructed regarding the time when they are cured. Many feel that when the acute symptoms have disappeared, they are free from infection and cease coming. Another evil is the drugstore dispensary. There should be some regulation in regard to druggists' treating venereal diseases. I always endeavor to ascertain from patients how many attacks they have had before and whether they have been treated at a drugstore or by a physician, and find in a great many instances that they have had preliminary treatment from the corner druggist.

MR. JOHN E. RANSOM (Superintendent, Central Free Dispensary), Chicago: We shall never solve the problem of venereal diseases, until we have solved the problem of sexual immorality; and we will agree that that is an educational matter. Until we have trained the people in matters of self-control and in a sense of their responsibility to the community, we shall not have solved the problem. One of the great shortcomings of what we have done in the past is that we have not cured the patients. I have looked over the records of our institution for 1914 and 1915 with reference to cases of syphilis and gonorrhea. Those who came once constitute the largest number; those who came twice the next, and so on, until the number who came a sufficient number of times to be cured are very few indeed. This is the problem of the administration of the institution, and so far as it fails to keep patients under treatment until cured, it is failing as a medical institution.

In the Massachusetts General Hospital, in which social service work was first started, they have a worker devoting whole time to syphilis, and during the first ten months in the special clinic for the treatment of syphilis they had 2,114 patients. These made 10,326 visits, or an average of five visits to each patient. In the ten months about 10 per cent. of the patients were lost. In a city like Boston, and this is more true of Chicago, a large percentage of syphilitics are transients whom we expect to lose.

In our institution we are treating syphilis in every department. Being a layman, I am not able to say whether it should be treated in all the departments or not; but taking the parallel of tuberculosis, the greatest advances have been made in special clinics, hospitals, dispensaries and sanatoriums for this one disease. I believe that when syphilis and gonorrhea are treated in the same way, we shall be doing better work than we are doing today.

DR. B. N. NOVY, Chicago: We have in Chicago six colleges, three dispensaries and many hospitals which have dispensary connections. We see 8,066 cases in these dispensaries. They all have day hours and none has night hours. Two types of patients come to the dispensaries: one is the chronic disease carrier. He comes only when he has an acute exacerbation and stays until the acute attack is past or he has no discomfort and then leaves. The other class is the temporarily unemployed class who come for treatment. They also stay until they can secure a position. Not more than 5 or 10 per cent. of patients are cured at our dispensaries for the reason that they do not come back, or do not have the time to come back. If we had night dispensaries they would be able to come until cured.

DR. ANNA E. BLOUNT, Oak Park, Ill.: We have made two mistakes: in treating effects instead of determining causes and in treating the physical side of the question as though it were a physical question instead of a psychologic, a social, an economic question. When prostitution is not a trade for women we shall not have a venereal problem. I believe the reason we have so much venereal disease at present is that our girls cannot earn a decent economic independence. Without treating the social question I believe we are only tinkering with results in all these matters, particularly as to medical cure and medical prophylaxis. I think the cure when we get it will be educational, just as it was in tuberculosis.

DR. RACHELLE YARROS, Chicago: We are doing less for cases of gonorrhea, and they are equally dangerous, as syphilis. The treatment of venereal disease is an expensive luxury, and few can afford it.

MR. W. A. CLARK (Secretary, Chicago Branch American Social Hygiene Association), Chicago: The survey contemplated is yet somewhat hazy. A group connected with the City Club and other organizations are hoping we may be able to get together persons and funds with which to make such a survey. The persons interested are men interested in social questions, not medical men. We are approaching it from the standpoint of a social problem. The assistance of men who have specified knowledge of these conditions and who are trained as public health men will aid us in getting the funds necessary to make this survey.

DR. B. C. CORBUS, Chicago: We have in Chicago, I believe, twenty-seven dispensaries. The largest are the Northwestern, the Postgraduate, the Central Free Dispensary and the University of Illinois. Today I interviewed the heads of each of these clinics as to what percentage of patients they are turning out cured. One said 25 per cent. I challenged the statement. In fact, only 1 or 2 per cent. are discharged as cured. We should consider this problem under education, isolation and treatment of cases and also under clinical facilities. Few of us realize what other cities are doing. In New York they are far ahead of Chicago. In England they have the famous Lock Hospital, known throughout the world, for the treatment and care of these cases. Chicago is not doing her share.

MR. SAMUEL E. THRASHER (President, Committee of Fifteen), Chicago: I can speak of what the Committee of Fifteen is trying to do. We do not believe we can solve the problem of the social evil in a day in a city like Chicago or anywhere else. We are dealing with only one phase of this problem, and that is commercialized vice. The great cause of commercialized vice, as we see it, is threefold: (1) undeveloped mentality; 80 per cent. of women in prostitution are subnormal; (2) overdeveloped animalism on the part of men, and (3) that avarice which commercializes these two weaknesses of human nature. So long as men and women make money out of this business—and it is a large commercialized business in Chicago today—we are not going

to get far in solving this problem. The Committee of Fifteen aims to destroy the profitable business of prostitution. If for no other reason than for the promotion of the public health, prostitution should be suppressed.

DR. A. W. STILLIANS, Chicago: In the past our failure has been to convince the patient that it is necessary for him to come back. We have also failed to disabuse his mind of the suspicion that if the physician wanted him to come back it was from some ulterior motive. The social service worker has time to acquire the confidence of the patient and power over him. Soon after the establishment of social service in the county hospital it was recognized that an evening clinic was needed; that there were many patients who could not get to the day clinics, because of their work and the danger of losing their positions. At the request of Mrs. Ira Couch Wood, of the Illinois Training School for Nurses, an evening pay clinic for skin diseases was established. Lately it has kept open two nights a week. The average attendance has been seven patients an evening, and there have been forty-nine cases since June. These forty-nine patients made 192 visits. Only eight patients made less than five visits; seventeen made more than five. A large proportion of them, of syphilis, are clinically free and Wassermann free. The urologic department of the clinic has been open only a short time, but has had twelve cases, with thirty visits. We make moderate charges—$1 for consultation and medicine. We found that was unjust because some required expensive medicines. Now we charge 50 cents for consultation and a little over the wholesale cost of the drugs. For salvarsan we charge something over the wholesale cost of the drug. The Wassermann reaction costs $1, and the other laboratory examinations are made free. Our financial report so far is not very good because at first we treated a good many free. We treated sixty-two without recompense, but this is unnecessary, in our experience. There are a few who are working at a wage insufficient to take care of them and their dependents, and we are glad to treat them. We got far enough in October to feel that we could pay the physicians. This I believe will have much to do with making efficient service, as many young men of high caliber and ability are willing to go into the work who would not otherwise feel able to do so.

MR. ARTHUR B. FARWELL, Chicago: It is all right to take care of women and men diseased, but it is a great deal better to prevent them from being diseased. I speak from an experience of nearly fifty years in this work, and to me, in any of these questions the greatest power is religion; second, education; third, agitation, and fourth, the law

DR. CLARA P. SEIPPEL, Chicago: I should like to mention what Chicago is doing for venereally diseased children. Chicago has the only institution in the world, so far as I know, that cares for and educates these children while under treatment. What Chicago should do for these children is also a question that I think will develop along with these other problems. In 1911, in connection with the general welfare exhibit, Dr. Grace Meigs and I made a survey of twelve leading hospitals and dispensaries, and were amazed to learn that 1,000 little girls came there annually afflicted with vulvovaginitis. This problem will have to be considered with the venereally diseased persons, and it will be necessary for the state to provide for them.

DR. MARY G. MCEWEN, Chicago: The General Federation of Women's Clubs is engaged in a nation-wide campaign along this line. At the last meeting of the Federation in New York, the only resolution endorsed by the federation was one authorizing all clubs in New York to cooperate with boards of health and other agencies to secure adequate facilities for the diagnosis and treatment of venereal diseases, and at present a nation-wide campaign is in progress asking each club to arouse interest in the subject, passing out leaflets, making surveys of local conditions, a follow-up program, and devising ways and means to make it practical in their own community; so that in every club in the nation they will be looking toward Chicago to find what a big city should do, and then they will apply it to the smaller cities.

DR. CHARLES S. BACON, Chicago: I should like to ask Dr. Pusey in his closing discussion to tell us whether he thinks agencies now existing, the dispensaries now handling this work, are probably sufficient satisfactorily to meet the situation; or would it be desirable for the municipality, or the county, to undertake to establish dispensaries and institutions for the handling of this question, just as they have for the handling of the tuberculosis question?

DR. EDWARD A. FISCHKIN, Chicago: It was the expression in Berlin of the German National Society for the Suppression of Venereal Diseases about three years ago that neither character, religion nor anything else would eradicate human passion. The only thing that is feasible is to attempt to eradicate the disease. Preventive medicine has succeeded in many other fields. Dr. Pusey has omitted to pay attention to the possibility of curing the disease by the large army of physicians. Medical armies are not cured in dispensaries, but the diseases of society are taken care of by the army of physicians outside the dispensaries, and if we want to eradicate the venereal diseases, the patients must have the chance to be treated by the great army of medical men. The dispensaries in Chicago, as we have seen, take care of only 8,000, while according to the figures given by Dr. Pusey there must be at least 50,000 afflicted. We physicians who have somewhat more chance to deal with these diseases see a large number of patients who are unable to pay. It will be of advantage in gaining our point if all possible agencies carry propaganda to the workingman and others to induce them to get over their disease. There are larger facilities than those of the hospitals and dispensaries; there are the aid societies of the workingmen, the insurance societies, that would carry propaganda to them. In Berlin that was the first effort to carry propaganda. These persons should not be treated as outcasts. I think these agencies are of greater benefit than all the dispensaries and hospitals which the community can establish.

DR. BERTHA VAN HOOSEN, Chicago: I believe the establishment of more and more dispensaries will do little toward the eradication of gonorrhea. If we would tell women that they have gonorrhea, whether innocently or otherwise, and that it is going to destroy their sexual organs, and take it seriously and put them in a hospital and treat them in a careful, conscientious way, we would accomplish something.

DR. WILLIAM A. PUSEY, Chicago: In answer to Dr. Bacon, I do not think present hospital and dispensary facilities are nearly adequate to handle all cases; but I do think that the first step in a practical way would be to improve present services and imbue them with the importance of the sanitary work they have to do. I think a desirable thing to do would be to have established one hospital in the down-town district, not only for serving that district, but as an object lesson.

With regard to Dr. Van Hoosen's remarks, to take it seriously, I do not think that any one who talked tonight failed to consider the seriousness of gonorrhea. I challenge her statement that it is necessary to take these patients into the hospital. It is ideal, but we are dealing with world and not with Utopia. They can be handled on their feet, and we can handle the problem better practically in that way.

One point Dr. Bremerman brought out. I would like to have drug clerks prevented from treating syphilis and gonorrhea. I sympathize with Dr. Blount's and Dr. Yarros' ideas, but I was asked to talk on a medical topic. I am just as interested in seeing people happy and comfortable as they are. I do not think we can wait for a social revolution before tackling venereal diseases. I have a feeling of regret when the moral issue is raised. Of course it is a moral issue. The discussion tonight was on a disease that is mixed up with a moral question, but we are dealing with disease and it can be handled as disease, and unless so handled we shall never get anywhere. We cannot control the sexual appetite. We can reach a group like this, of educated people, but not the submerged tenth, and they are the real menace. We must handle it as a matter of disease. Education and religion will reach a certain number, and I am interested in doing that to as great an extent as possible, but I am convinced that we must tackle it as a physical proposition. The problem goes back to Adam. The sexual appetite is not an instinct; it is one of the fundamental appetites of man, and sexual contact

can be controlled only within moderate limits. The sexual appetite in the intelligent, the careful, the conscientious can be controlled and restrained. It is a biologic function that cannot be restrained beyond certain limits, and we have got to deal with venereal diseases as diseases. I repeat that I am ready to support all efforts for the betterment of mankind and improve the moral status, but we must not forget that man is man—and I mean the woman too—and possesses fundamental instincts that cannot be gotten away from.

What this organization can do is this: It can make a survey. I should like to see that done; we can make efforts to better and increase the provisions for taking care of the venereally affected. We shall secure benefit every time we establish a well equipped, well manned dispensary for that purpose. Dispensaries such as outlined tonight will do inestimable good. They will not eradicate the disease. I shall not live to see that, nor will some of the younger; but in time venereal diseases can be controlled just as definitely as yellow fever. The problem is simpler than that of tuberculosis, and morally it is like yellow fever, and it is amenable to sanitary handling. It was a pleasure to hear what Dr. Ormsby is doing, and Dr. Stillians. It is a revolution to hear about social service work being done in venereal disease.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

December, 1916, XVIII, No. 6

1 *Acidosis in Acute and Chronic Disease. C. Frothingham, Jr., Boston.—p. 717.
2 Sensory Disturbances of Cerebral Origin. A. Gordon, Philadelphia.—p. 733.
3 *Action of Various Female Remedies on Excised Intestine of Rabbit. W. R. Delzell, G. E. Burman and J. D. Pilcher, Omaha.—p. 752.
4 Case of Intermittent Complete Dissociation of Auricles and Ventricles Presenting Unusual Features. J. D. Heard and A. H. Colwell, Pittsburgh.—p. 758.
5 *Origin and Conduction of Cardiac Impulse. J. A. E. Eyster and W. J. Meek, Madison, Wis.—p. 775.
6 *Metabolism Study of Goiter; Effect of Thyroid and Thymus Treatment. J. O. Halverson, O. Bergeim and P. B. Hawk, Philadelphia.—p. 800.
7 *Relation of Changes in Form of Ventricular Complex of Electrocardiogram to Functional Changes in Heart. G. C. Robinson, St. Louis.—p. 830.
8 *Study of Low Blood Pressures Not Associated with Trauma or Hemorrhage. J. P. Simonds, Chicago.—p. 848.

1. **Acidosis in Acute and Chronic Disease.**—From his studies Frothingham thinks it fair to conclude that the study of the hydrogen-ion concentration in the urine is not reliable as an index of acidosis; that evidence of acidosis appears at times in certain diseases, while in other diseases no evidence of it is found. Those diseases which showed an acidosis at times by some of these tests are diabetes, chronic nephritis, pneumonia, acute articular rheumatism and several acute febrile conditions in the miscellaneous group. Cases of exophthalmic goiter, epilepsy, syphilis, chronic cardiac disease, subacute nephritis, lung abscess, and many in the miscellaneous group distinctly did not show any evidence of acidosis by these tests. The results in the cases of primary anemia, gastric cancer, Addison's disease, and cirrhosis of the liver were not so clearly defined and in some of the tests suggested a slight acidosis. It is evident from these tests that the acidosis found in diabetes is due to different causes, in part at least, from those that produce it in other conditions. It also seems likely that the acidosis met with in different diseases is due to various causes, since the response to these tests varies somewhat in the different conditions. Of these tests, either the estimation of the carbon dioxid tension in the alveolar air or the so-called soda tolerance test showed variation from the normal in all the cases of acidosis. They also seem to be of value in detecting the degree of acidosis.

3. **Action of Female Remedies on Excised Intestine.**—The results of this work indicate that the members of the group of female remedies that act on strips of uterus exhibit practically an identical action on strips of intestine, both in manner and degree of action. The other drugs of the group have no effect on either uterus or intestine. This shows that they in no sense act specifically on the uterus. The following depressed the intestinal strips actively in the concentrations used: Jamaica dogwood, pulsatilla, unicorn root and figwort; while valerian (the oil is very depressant) and lady's-slipper are less active; and skullcap, wild yam, liferoot and false unicorn depress very slightly. The following are practically devoid of action: blessed thistle, cramp bark, maple bark, black haw, passion flower, motherwort and squaw vine. They have no effect on the smooth muscle of arteries in rather concentrated solutions.

5. **Origin and Conduction of Cardiac Impulse.**—Eyster and Meek found that in the dog's heart the cardiac impulse, arising within the upper part of the sino-auricular node, is conducted to the right auricle and to the auriculoventricular node by two separate paths. The former is a diffuse path represented by the contact of the right auricle with the node. The latter path is either also diffuse in nature, involving connections above, below and on the intercaval borders of the node, or there are numerous possible paths offering varying degrees of resistance to the passage of the impulse.

6. **Metabolism Study of Goiter.**—A study was made of the metabolism of nitrogen, phosphorus, sulphur, calcium and magnesium on a patient with exophthalmic goiter, with apparently a slight hypothyroidism, and responding readily to treatment. The study was made in five periods of five days each, including periods of thyroid and thymus treatment. In the preliminary period without treatment a marked disturbance of metabolism was noted, with pronounced losses of nitrogen, phosphorus, and magnesium and a practical balance of calcium and sulphur. Thyroid treatment markedly stimulated the metabolism of all elements determined, this stimulation continuing long after treatment was stopped. Considerable retention of all elements was brought about, the maximum effect being reached sooner in the case of calcium and magnesium than in the case of nitrogen, sulphur and phosphorus. The effect of thymus administration on the metabolism was less marked than that of the thyroid, but appeared to be distinct. In the thymus period the retention of all elements was depressed. When thymus administration ceased, the rate of retention for all elements immediately increased. Thus thymus treatment appeared to depress the stimulating effect of the thyroid on metabolism, which supports the view of a possible antagonistic action of these glands, such as has been suggested by others on the basis of indirect evidence. The administration of thyroid caused diuresis immediately. Thymus treatment had the opposite effect, leading to a retention of water, with marked decrease in urine volumes on constant water ingestion. The weight of the patient decreased on thyroid treatment and increased after withdrawal and on thymus administration. Following thyroid treatment there was a progressive decrease in urinary indican excretion. This may indicate lessened intestinal putrefaction.

7. **Changes in Form of Ventricular Complex.**—A series of cases is reported which yielded electrocardiograms showing abnormal ventricular complexes. These abnormalities consist in changes in the initial portion of the complexes, the Q, R, S group, and differ from those yielded by contractions caused by ectopic stimuli and from those changes which occur with bundle-branch block. These observations are taken by Robinson as evidence for the belief that in cases in which the ventricular complexes constantly show certain abnormal forms, there are functional changes in the heart which prevent the normal recovery of intraventricular conduction during diastole. It is shown that changes in form of the ventricular portions of the electrocardiogram may occur synchronously with functional changes in the heart, and evidence is offered for the belief that certain abnormalities in the form of the electrocardiogram indicate functional derangement of the ventricles.

8. **Artificial Respiration and Low Blood Pressure.**—It is suggested by Simonds that in cases of shock in man, associated with low blood pressure not due to hemorrhage, the artificial production of dyspnea or the voluntary increase of the rate and depth of respiration by the patient may lead to improvement.

Arkansas Medical Society Journal, Little Rock

December, 1916, XIII, No. 7

9 *Case of Splenectomy for Pernicious Anemia. W. F. Smith, Little Rock.—p. 131.
10 Mental and Nervous Effect of General Disease. W. M. McRae, Little Rock.—p. 137.

9. **Splenectomy for Pernicious Anemia.**—Smith's case was one of pernicious anemia with a disseminated sclerosis which he believes to be due to the pernicious anemia. The patient's mental condition was an infection exhaustion psychosis. The neurology is that of a disseminated sclerosis due to an impoverished blood stream, there being an involvement of the lower motor neurons, and there would probably be found in the motor tracts of the cords sclerotic patches. The patient's present mental condition seems to be normal His disposition is happy and his outlook optimistic. His physical condition has improved to the extent that he is able to walk around with the aid of crutches.

Bulletin of Medical and Chirurgical Faculty of Maryland

December, 1916, IX, No. 6

11 Alimentary Dilatation; with Especial Regard to Atony. F. B. Turck, New York.—p. 84.

Canadian Medical Association Journal, Toronto

December, 1916, VI, No. 12

12 Gunshot Wounds of Present War. E. J. Williams.—p. 1057.
13 Internal Secretions: A Review. J. B. Collip, Edmonton.—p. 1063.
14 Appendicitis. M. O. Klotz, Ottawa.—p. 1070.
15 Earlier Diagnosis of Pulmonary Tuberculosis. H. A. Farris, St. John, New Brunswick.—p. 1083.
16 Special Work in Field Ambulance. P. G. Bell.—p. 1091.
17 Case of Shell Shock. E. Ryan.—p. 1095.
18 *Foreign Body in Tumor of Anterior Abdominal Wall. C. K. P. Henry, Montreal.—p. 1100.
19 Pyosalpinx Complicating Ectopic Gestation. J. R. Fraser, Montreal.—p. 1101.

18. **Foreign Body in Tumor of Anterior Abdominal Wall.**—Save for a tumor the size of a hen's egg, just below and external to the umbilicus, the examination of the abdomen in Henry's case was negative. The mass was ill defined but was clearly in the abdominal wall, attached to and movable with the contractions of the right rectus muscle. White blood cells were 9,600, red blood cells, 6,300,000; there was no occult blood in the stools and the systems were normal. The mass was considered to be a tumor arising from the rectus sheath, likely a fibroma. On attempting to excise the growth, it was found softer than expected and was torn through; a soft center of inflammatory tissue was exposed and, sticking upright in this, a pointed object was seen which was pulled out with artery forceps. This was a fish bone, about 1½ inches long, the sharp point nearer the skin surface and lying perpendicular to the plane of the abdominal wall. The mass of inflammatory tissue was dissected free and down through the rectus sheath and muscle to the peritoneum, a portion of which had to be removed with the tumor. Underlying this piece of peritoneum was adherent omentum which had to be tied off. At no point was there any adherent bowel and no hernia existed.

Colorado Medicine, Denver

December, 1916, XIII, No. 12

20 Library and Its Meaning. L. Farrand, Boulder.—p. 363.
21 Greetings from Surgeon General's Library. F. H. Garrison, Washington, D. C.—p. 366.
22 Fasting. C. D. Spivak, Denver.—p. 368.
23 Diagnosis of Menstrual Reflux Through Tubes. J. N. Hall, Denver.—p. 373.
24 Infections of Seminal Vesicles. W. M. Spitzer, Denver.—p. 376.
25 Two Years' Experience with Much's Tuberculin in Treatment of Tuberculosis. S. Simon, Denver.—p. 381.

Georgia Medical Association Journal, Augusta

December, 1916, VI, No. 8

26 *Diseased Conditions of Salivary Glands and Their Ducts. D. Roy, Atlanta.—p. 143.
27 Ischemic Myositis (Volkman's Contracture); Report of Two Cases. C. C. Harrold, Macon.—p. 149.
28 *Ideal Operation for Retrodisplacements of Uterus. W. W. Battey, Jr., Augusta.—p. 152.
29 Case of Gunshot Wound of Spinal Cord; Laminectomy, Removal of Bullet, Recovery. W. L. Cooke, Columbus.—p. 155.
30 Conservation of Tissue; Restoration of Function, Not Removal of Organs, Should Be Aim of Surgery. F. W. McRae, Atlanta.—p. 158.

26. Abstracted in THE JOURNAL, May 6, 1916, p. 1491.

28. **Operation for Retrodisplacements of Uterus.**—In the method described by Battey the round ligament is caught in a pair of forceps at a point which when drawn up seems to take up the laxity, and made taut. With a needle threaded with fine linen the proximal and distal ends are stitched together. This gives us a loop of the round ligament. A second and third stitch one-half inch apart toward the end of the loop are introduced through both sides of the ligament and tied, the third stitch being left long. With a pair of curved forceps the internal ring is entered and the peritoneal investment of the round ligament is dessected downward and the peritoneum is punctured at a point as near as possible to the first stitch in the ligament. The linen stitch left long is caught in forceps and the ligament is pulled through the artificial opening. With No. 1 chromic catgut the ligament is sutured to the under surface of fascia of the rectus by interrupted sutures. The operation is, in a measure, extraperitoneal, and the author says there is no likelihood of an intestinal obstruction taking place.

Illinois Medical Journal, Chicago

December, 1916, XXX, No. 6

31 Prevention of Disability Following Fracture of Os Calcis. C. R. G. Forrester, Chicago.—p. 385.
32 Clinical Study of Lobar Pneumonia. F. Tice and R. F. Herndon, Chicago.—p. 388.
33 Community Nursing. H. K. Scatliff, Elgin.—p. 394.
34 Carriers of Gonococcus. E. H. Eastman, Chicago.—p. 396.
35 Surgical Treatment of Acute Epididymitis. C. M. McKenna, Chicago.—p. 398.
36 Seminal Vesiculitis. Indications for Operative Interference: Report of Case. E. W. White, Chicago.—p. 400.
37 Restricted Milk Diet for Removal of Dropsies. N. S. Davis, Chicago.—p. 404.
38 Nephritic Crisis. L. M. Bowes, Chicago.—p. 408.
39 Case of Bichlorid of Mercury Poisoning Successfully Treated by Sodium Acetate and Sodium Bicarbonate. M. S. Pedott, Chicago.—p. 410.
40 Infantile Spinal Paralysis. L. H. Johnson, Casey.—p. 411.
41 Intestinal Teniasis in Chicago. W. C. Becker, Chicago.—p. 416.

Iowa State Medical Society Journal, Des Moines

December, 1916, VI, No. 12

42 Then and Now. H. H. Clark, McGregor.—p. 497.
43 Dental Foci of Infection, Their Cause and Prevention. E. A. Schrader, Independence.—p. 501.
44 Bronchial Asthma. T. R. Jackson, Albia.—p. 509.
45 Postoperative Management of Surgical Cases. C. J. Rowman, Iowa City.—p. 511.
46 Diagnosis of Gastric and Duodenal Ulcer. E. A. Merritt, Council Bluffs.—p. 517.
47 Reflexes of Appendix. H. H. Ennis, Baxter.—p. 520.

Journal of Biological Chemistry, Baltimore

December, 1916, XXVIII, No. 1

48 New Constituents of Milk. Distribution of Phosphatides. T. B. Osborne and A. J. Wakeman, New Haven, Conn.—p. 1.
49 *Antigenic Properties of Beta-Nucleoproteins. H. G. Wells, Chicago.—p. 11.
50 Changes in Urea Content of Blood and Tissues on Exclusive Oat Diet. H. B. Lewis and W. G. Karr, Urbana, Ill.—p. 17.
51 *Action of Sodium Citrate and Its Decomposition in Body. W. Salant and L. E. Wise, Washington, D. C.—p. 27.
52 *Kafirin, an Alcohol Soluble Protein from Kafir, Andropogon Sorghum. C. O. Johns and J. F. Brewster, Washington, D. C.—p. 59.
53 *Some Proteins from Jack Bean, Canavalia Ensiformis. D. B. Jones and C. O. Johns, Washington, D. C.—p. 67.
54 *Proteins of Peanut, Arachis Hypogea. Globulins Arachin and Conarachin. C. O. Johns and D. B. Jones, Washington, D. C.—p. 77.
55 Modified Benedict and Hitchcock Uric Acid Standard Solution. L. J. Curtman and M. Freed, New York.—p. 89.
56 Occurrence and Physiologic Significance of Flavone Derivatives in Plants. K. Shibata, I. Nagai and M. Kishida, Tokyo.—p. 93.
57 Protein Copper Compounds. T. B. Osborne and C. S. Leavenworth, New Haven, Conn.—p. 109.

58 *Chinese Preserved Eggs—Pidan. K. Blunt and C. C. Wang, Chicago.—p. 125.
59 Composition, Especially Hydrogen Ion Concentration of Sea Water in Relation to Marine Organisms. J. F. McClendon, Minneapolis.—p. 135.
60 *Dietary Deficiencies of Maize Kernel. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 153.
61 Perfusion Pump. F. B Kingsburg, Minneapolis.—p. 167.
62 Mechanism of Diffusion of Electrolytes Through Membranes of Living Cells. J. Loeb, New York.—p. 175.
63 Elimination of Malates After Subcutaneous Injection of Sodium Malate. L. E. Wise, Washington, D. C.—p. 185.
64 *Relation Between Water and Glucose Concentration of Blood. A. Hiller and H. O. Mosenthal, Baltimore.—p. 197.
65 Folin and Denis Method of Nitrogen Determinations by Direct Nesslerization and Its Application to Spinal Fluids. R. L. Kahn, New York.—p. 203.
66 Effects of Feeding Proteins of Wheat Kernel at Different Planes of Intake. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 211.
67 *Urinary and Fecal Output of Calcium in Normal Men. C. F. Nelson and J. L. Williams, Lawrence, Kan.—p. 231.
68 *Calcium and Magnesium Content of Normal Urine. C. F. Nelson and W. E. Burns, Lawrence, Kan.—p. 237.
69 Influence of Carbohydrates on Accuracy of Van Slyke Method in Hydrolysis of Casein. E. B. Hart and B. Sure, Madison, Wis. —p. 241.
70 *Method for Measurement of Urea Excreting Function of Kidneys. T. Addis and C. K. Watanabe, San Francisco.—p. 251.
71 *Pancreatic Diabetes in Dog. Influence of Pylorus Exclusion and of Gastrectomy on Effects of Pancreatectomy. J. R. Murlin and J. E. Sweet, Philadelphia.—p. 261.
72 *Influence of Sodium Carbonate on Human Diabetes. J. R. Murlin and L. F. Craver, New York.—p. 289.
73 Relationship Between Oxidase Activity of Plant Juices and Their Hydrogen Ion Concentration. H. H. Bunzell, Washington, D. C.—p. 315.
74 Hitherto Neglected Factor Affecting Determination of Minute Quantities of Creatinin. A. Hunter and W. R. Campbell, Toronto, Canada.—p. 335.

49. **Antigenic Properties of Beta-Nucleoproteins.**—The so-called beta-nucleoproteins obtained from various tissues by extracting with boiling water, Wells says, possess definite antigenic properties demonstrable by the anaphylaxis reaction. As there are but few known proteins that retain their antigenic capacity after boiling, this observation may indicate something as to the nature of the protein complex of beta-nucleoproteins. The proteins of alpha-nucleoproteins are, on the contrary, very susceptible to chemical and physical changes. Beta-nucleoproteins from beef pancreas, beef spleen, and pig pancreas, seem to be similar but not identical, so far as can be determined by the anaphylaxis reaction.

51. **Action of Sodium Citrate; Its Decomposition in Body.**—Salant and Wise found that sodium citrate disappears rapidly from the circulation after intravenous injection into cats and dogs, but this is retarded when the doses are repeated. Large doses of sodium citrate when given by the mouth render the urine alkaline. Only negligible quantities are sometimes found in the urine and in the blood after feeding sodium citrate. The toxicity of sodium citrate when given intravenously depends on the rate of injection, the fatal dose varying between 0.4 and 1.6 gm. per kilo (approximately), but about 70 mg. may produce symptoms. Only large amounts of citrate are toxic when ingested. Large doses given subcutaneously showed cumulative action. No citrate was found in the urine when doses under 0.5 gm. per kilo were given intravenously. The toxicity of sodium citrate depends on the rate of its oxidation in the body. Sodium citrate mixed with blood in the proportion of 1:100 inhibited coagulation for four days when kept at a temperature of 10 C.

52. **Kafirin, Alcohol Soluble Protein from Kafir, Andropogon Sorghum.**—A new alcohol soluble protein has been isolated by Johns and Brewster from kafir seeds, which constitutes more than one-half the protein in the seed. This protein has been named kafirin. Kafirin resembles zein in its ultimate composition, but is different in physical properties. It contains tryptophan and apparently lysin, both of which are lacking in zein. An analysis of kafirin by the Van Slyke method shows quantitative differences between kafirin and zein.

53. **Proteins from Jack Bean.**—Two globulins, canavalin and concanavalin, and an albumin of the legumelin type have been isolated by Jones and Johns from the jack bean. The distribution of nitrogen in canavalin and in the albumin has been determined.

54. **Proteins of Peanut, Arachis Hypogea.**—Two globulins have been isolated by Johns and Jones from the peanut. These have been named arachin and conarachin. Arachin contains 0.4 and conarachin 1.09 per cent. of sulphur. Arachin gave 4.96 and conarachin 6.55 per cent. of basic nitrogen, the latter being the highest percentage of basic nitrogen recorded for any seed protein. From the results obtained it seems probable that peanut press cake will prove to be highly effective in supplementing food products made from cereals and other seeds whose proteins are deficient in the basic amino-acids. Feeding experiments are already in progress to determine the nutritive value of combinations of peanut proteins with other proteins obtained from the more extensively used seeds.

58. **Chinese Preserved Eggs—Pidan.**—This paper gives the results of analysis of a kind of Chinese preserved eggs called pidan. The Chinese and other Oriental people preserve eggs, not necessarily to keep them unchanged, but to make various new substances—a process analogous to the production of cheese from milk. The products have been little studied and the literature on the subject is therefore limited. The following changes have been shown to take place during the formation of pidan from fresh ducks' eggs: (1) water in large quantities has been transferred from the white to the yolk, and water has been lost from the white to the outside; (2) the ash and the alkalinity of ash have increased in a way similar to that of other eggs preserved in alkali; (3) the ether extract has decreased and its acidity is high; (4) both total and lecithin phosphorus have decreased; (5) the noncoagulable nitrogen has increased and also the ammoniacal nitrogen, the latter to an extraordinary degree, and the amino-nitrogen is high. From these changes the conclusion is drawn that decomposition of the egg protein and of the phospholipoids has taken place. The production of pidan from the fresh eggs is probably brought about through the agency of the alkali, bacteria and enzymes.

60. **Dietary Deficiencies of Maize Kernel.**—The results of a systematic series of experiments with ground maize, in which single or multiple additions of purified food substances were made, are presented by the authors. The proteins of the maize kernel contain all the amino-acids essentials for growth, but the proportions of certain of them are such that they are not utilizable to a high degree as the sole source of protein. The maize kernel contains both the unidentified dietary factors, the fat soluble A and water soluble B. The former is present in amount too small for the maintenance of growth at the maximum rate in rats, and regardless of how satisfactorily the maize kern . is supplemented in other respects, failure of perfect nutrition will supervene within a few months unless some foodstuff containing the fat soluble A (butter fat, certain other fats, leaves of plants, etc.) is supplied. Maize contains an abundance of the unidentified dietary factor, the water soluble B. The inorganic content of the corn kernel is not of a character suitable for the promotion of growth. The addition of purified protein and salts or of butter fat and salts to the maize kernel fails to induce physiologic well-being throughout the life of the animal. The addition of protein and butter fat without salts forms a poorer food mixture than the pairs of additions first named.

64. **Relation Between Water and Glucose of Blood.**—Hiller and Mosenthal state that the water concentration of the blood in the normal individual often shows a variation of about 1 per cent. during the course of a few minutes. There is no assignable cause for this inconstancy. Raising or lowering the sugar content of the blood does not give rise to a corresponding change in its concentration. If glycemia plays a part in controlling the water content of the blood, this is so slight in its effect that other factors, such as polyuria, etc., nullify its results, except in rare instances.

67. **Calcium in Normal Men.**—The average daily output of calcium in urine and feces varied in the cases studied by

Nelson and Williams from 0.420 to 1.016 gm. Since the individuals examined were apparently in the best of health, of ages from 13 to 70 years, and furthermore, since they were all on absolutely unrestricted diets, guided solely by appetite, the results obtained represent normal values in calcium excretion. From subsequent data from the same individuals covering four additional five-day periods during an interval of more than six months, these differences remained practically within the same limits. The daily combined urinary and fecal excretion of calcium, on unrestricted diets, may thus be said to vary roughly from 15 to 25 per cent.

68. **Calcium and Magnesium Content of Normal Urine.**—The average daily output of calcium and magnesium (calculated as oxid) for five-day periods varied in the cases studied by Nelson and Burns from 0.1685 to 0.1468 gm. of calcium and 0.1912 to 0.3130 of magnesium. The daily output of calcium and magnesium of twenty-five apparently healthy individuals showed seventeen in which calcium was excreted in larger amounts than magnesium, and eight in which magnesium predominated over calcium. The largest amount of calcium (calculated as oxid) excreted in one day was 0.4875 gm.; magnesium (calculated as oxid), 0.4160 gm. The smallest amount of calcium was 0.0990 gm.; magnesium, 0.1180 gm. Either calcium or magnesium may be excreted by way of the urine in the larger amount, in the normal individual. Whichever element predominates does so constantly, or very nearly so, and seems to be independent of the character of the food ingested.

70. **Urea Excretion.**—Urine and blood were collected simultaneously from rabbits, and the ratio

$$\frac{\text{gm. of urea in one hour's urine}}{\text{gm. of urea in 100 c.c. of blood}}$$

was determined before and after the destruction of one kidney by ligation of its ureter, while the animals were taking similar food and the same amount of water. After the operation there was no decrease in this ratio as compared with the one found under similar conditions before operation, except when urea was injected. The depression of the ratio after the operation when urea was injected is interpreted as indicating that the remaining kidney had less capacity for the excretion of urea than both kidneys before operation. The fact that a depression of the ratio was found only when urea was injected is explained by Addis and Watanabe on the theory that the capacity of the remaining kidney was sufficient to meet ordinary demands, but showed itself defective under the strain of the additional work thrown on it by the urea injection.

71. **Pancreatic Diabetes.**—The results of this study suggest that the internal function of the pancreas may be closely akin to its external function, in that, on the one hand (external), it provides for the complete neutralization of the acid contents of the stomach, thereby protecting the liver in its glycogenic function, and on the other (internal), it somehow preserves the proper concentration of hydrogen ions in the tissues for combustion of glucose.

72. **Effect of Sodium Carbonate in Diabetes.**—Murlin and Graver recommend the normal salt rather than bicarbonate of sodium and are certain it can be used intraduodenally up to 1 per cent. with entire safety. However, if it is kept up too long there is possibility of sloughing. Signs of this were seen in one case, although it was not serious. The figures for blood sugar and specific gravity of the blood prove, they think, conclusively, that there may be a bona fide reduction in the percentage of blood sugar by the alkali independently of any factor of dilution. If this is true, there is little reason to doubt that the alkali may, in man as in the dog, facilitate the actual oxidation of glucose. Five cases were studied.

Journal-Lancet, Minneapolis

December 15, 1916, XXXVI, No. 24

75 *Value of Temporary Cholecystostomy in Gastric Surgery. L. L. McArthur, Chicago.—p. 723.
76 *Technic of Nerve Repair in Traumatic Injuries. J. F. Corbett, Minneapolis.—p. 725.
77 *Actinomycosis; Report of Cases. N. O. Ramstad, Bismarck, N. D. —p. 732.
78 Forceps Operation. R. S. Hart, Turton, S. D.—p. 735.
79 *Subcutaneous Administration of Fresh Human Blood. P. F. Holm, Wells.—p. 738.
80 Arsenobenzol in Syphilis. G. E. Brown, Miles City, Mont.—p. 740.

75. **Value of Temporary Cholecystostomy in Gastric Surgery.**—McArthur claims that in those cases of stomach surgery complicated by the need of biliary fistulae, whether gastro-enterostomies with or without excision of ulcer, resections of the stomach for malignant disease, or resection of ulcer-bearing areas, he has been able to obviate serious complications by the utilization of a temporary biliary fistula made in the normal gallbladder. A double purse-string suture, inverting around a small rubber tube the fundus of the gallbladder, and bringing out the same tube through the abdominal incision or through an appropriately placed stab puncture, he says, complicates the stomach surgery but little more than the making of a stab puncture through the abdominal flank for peritoneal drainage. This has been done for the past two years in a majority of his gastric operations. During the early postoperative hours, the bile being allowed to escape externally, fails to disturb the more or less paretic stomach.

76. Abstracted in THE JOURNAL, Nov. 25, 1916, p. 1626.

77. **Actinomycosis.**—The best treatment of actinomycosis in Ramstad's hands has consisted in the removal of the primary focus, and as much of the infected tissue as possible, with prolonged free drainage. Internally iodids were given to the point of saturation, and of late he has given copper sulphate internally and uses a solution of it for the daily dressing of the wounds. The effect of the iodids is increased by giving them intermittently.

79. **Subcutaneous Administration of Fresh Human Blood.**—For several years Holm has injected fresh human blood subcutaneously under various conditions and for different diseases, with apparent benefit. In a case of pernicious anemia, under frequent subcutaneous administration, he has seen the blood picture go from 30 per cent. hemoglobin to 85 per cent., and the red blood cells rise from 1,500,000 to over 4,000,000 in the course of a few months. He says that a fairly large amount of blood (4 to 8 ounces or more) may safely be injected into the subcutaneous tissues, and perfect absorption take place, if ordinary aseptic technic be employed. Blood which apparently is toxic to the patient when used intravenously may be injected subcutaneously without causing any undue reaction, and with apparent benefit. Holm describes the technic he has used in hemorrhage of the newborn, hemorrhage of gastric ulcer, splenomyeloid leukemia and in pernicious anemia.

Kansas Medical Society Journal, Topeka

December, 1916, XVI, No. 12

81 So-Called Chronic Gastro-Intestinal Indigestion. F. C. Boggs, Waverly.—p. 341.
82 Foul Breath Causes Other than Dental Caries. J. H. Johnson, Coffeyville.—p. 343.
83 Minor Emergency Surgery. N. C. Speer, Osawatomie.—p. 348.
84 Acidosis. W. T. Brown, Williamsburg.—p. 350.

Michigan State Medical Society Journal, Grand Rapids

December, 1916, XV, No. 12

85 *Sarcomatous Degeneration of Uterine Fibroids; Report of Eighteen Cases. F. C. Witter, Petoskey.—p. 565.
86 Empyema of Maxillary Sinus or Antrum. C. H. Oakman, Detroit. —p. 572.
87 Recent Methods of Transfusion with Indications and Technic. H. A. Freund and W. D. Mayer, Detroit.—p. 576.
88 *Recent Progress in Treatment of Carcinoma of Uterine Cervix. H. W. Hewitt, Detroit.—p. 578.
89 New Epoch in Practice. C. D. Aaron, Detroit.—p. 583.
90 Mercuric Chlorid Poisoning; Report of Case. L. J. Dretzka, Detroit.—p. 586.
91 Tuberculosis Survey as Seen. J. D. Dunlop, Alpena.—p. 587.

85. Abstracted in THE JOURNAL, Sept. 2, 1916, p. 768.
88. Abstracted in THE JOURNAL, Sept. 9, 1916, p. 834.

Military Surgeon, Washington, D. C.

December, 1916, XXXIX, No. 6

92 Demography in so Far as it Relates to Vital Statistics of Armies. W. P. Chamberlain, U. S. Army.—p. 583.
93 Army Medical Records. A. G. Wilde, U. S. Army.—p. 591.

94 Control of Venereal Diseases. W. A. Bloedorn, U. S. Army.—p. 599.
95 Experiences with Venereal Diseases at Schofield Barracks. L. C. Mudd, U. S. Army.—p. 608.
96 Treatment of Syphilis of Nervous System. A. S. Clark, New York.—p. 616.
97 Present Status of Blood Extract Coagulants and Blood Transfusion. C. G. Levison, U. S. Army.—p. 625.
98 Another Viewpoint of Our Red Cross Work in Serbia. S. O. Beasley.—p. 634. To be continued.
99 Straddle Trench Cover. D. R. Lucas, New York.—p. 644.
100 Sanitary Field Problems on Miniature Terrain. R. C. Turck, New York.—p. 649.

Nebraska State Medical Journal, Norfolk

November, 1916, I, No. 5

101 Diagnosis of Scarlet Fever. H. M. McClanahan, Omaha.—p. 131.
102 Epidemiology of Scarlet Fever. J. C. Moore, Omaha.—p. 133.
103 Complications of Scarlet Fever. N. Jones, Omaha.—p. 137.
104 What Shall Be Done with Indigent Tuberculous? S. R. Towne, Omaha.—p. 141.
105 Revised Classification of Nervous Diseases of Syphilitic Origin. F. E. Coulter, Omaha.—p. 145.

New York Medical Journal

December 16, 1916, CIV, No. 25

106 Medical Fees Among Primitive Man. J. Wright, Pleasantville.—p. 1173.
107 Anorectal Injuries. S. G. Gant, New York.—p. 1177.
108 Aural Complications of Grippe. E. B. Dench, New York.—p. 1180.
109 Nose and Throat Complications and Sequelae of Grippe. W. L. Culbert, New York.—p. 1182.
110 Removing Faucial Tonsils in Singers. I. W. Voorhees, New York.—p. 1183.
111 Experimental Pathology of Goiter. E. Zueblin, Baltimore.—p. 1186.
112 Infantile Paralysis Treated with Immune Serum. O. H. Petty, Philadelphia.—p. 1190.
113 Compulsory Health Insurance. E. V. Delphey, New York.—p. 1191.
114 Gastric and Duodenal Ulcers. S. Weiss, New York.—p. 1193.

New York State Journal of Medicine

December, 1916, XVI, No. 12

115 *Influence of Syphilitic Infection in Gynecology and Obstetrics. J. W. Bovee, Washington, D. C.—p. 569.
116 Therapy of Bronchial Asthma. W. Freudenthal, New York.—p. 574.
117 Causation and Treatment of Idiopathic, Operative and Postoperative Anorectal Hemorrhage. S. G. Gant, New York.—p. 580.
118 Removal of Tonsil as Prophylactic Measure. H. H. Forbes, New York.—p. 586.
119 Report of Possibly Milk Borne Epidemic of Infantile Paralysis. J. C. Dingman, Spring Valley.—p. 589.
120 Radium in Various Surgical Conditions. J. B. Bissell, New York.—p. 590.
121 *Some Practical Experiences in Medical Inspection in Rural Sections. W. A. Howe, Albany.—p. 593.
122 *Open Air Schoolchild as Type. E. Durney, Buffalo.—p. 595.
123 Health Insurance; Its Relation to Preventive Medicine. B. S. Warren and E. Sydenstricker, Washington, D. C.—p. 597.
124 Compulsory Health Insurance from Point of View of General Practitioner. E. V. Delphey, New York.—p. 601.

115. Abstracted in The Journal, June 24, 1916, p. 2122.

121 and 122. Abstracted in The Journal, June 3, 1916, pp. 1815 and 1816.

Philippine Journal of Science, Manila

May, 1916, XI, No. 3

125 Development of Twins and Other Polyembryos with Special Reference to Four Sets of Duck Twins. E. S. Ruth, Manilla.—p. 109.
126 *Influence of Fresh and Autoclaved Cows' Milk on Development of Neuritis in Animals. R. B. Gibson and I. Concepción, Manila.—p. 119.
127 Blood Pressure Picture of Filipinos. I. Concepción and E. Bulatao, Manila.—p. 135.

126. **Development of Neuritis in Animals.**—The experiments reported on by Gibson and Concepción indicate that the antineuritic vitamin is present in milk in slight amounts only and that the continued feeding of either fresh milk or autoclaved milk to animals (dogs and pigs) without suitable additions to the diet induces certain beriberi symptoms, namely, degeneration of the peripheral nerves, persistent edema and aphonia. There is no evidence that autoclaving the milk for two hours has in any way affected its nutritive value. Not even scorbutic changes have been observed. At the best, the antineuritic powers of the milk are so slight that in infant feeding the diet should be extended as soon as possible. The young of healthy mothers probably come into the world with a reserve supply of the vitamin substances sufficient to tide them over nutritively until the time when, under natural conditions of life, they would begin to eat other foodstuffs.

Southern Medical Journal, Birmingham

December, 1916, IX, No. 12

128 Opportunities and Responsibilities. R. Wilson, Jr., Charleston, S. C.—p. 1029.
129 Teaching and Practice. W. S. Thayer, Baltimore.—p. 1035.
130 *Comparative Study of Kidney Functional Tests. L. J. Desha, J. B. McElroy and B. W. Fontaine, Memphis, Tenn.—p. 1041.
131 *Case of Bichlorid of Mercury Poisoning; Recovery. C. Thorington, Montgomery.—p. 1045.
132 Some Aspects of Southern Mortality. J. A. Hodges, Richmond, Va.—p. 1046.
133 Empiricism in Surgery. J. H. Blackburn, Bowling Green, Ky.—p. 1054.
134 Carrel Method of Wound Sterilization. L. Noland, Birmingham.—p. 1056.
135 Incontinence in Female; Its Prognosis and Treatment. G. A. Wall, Tulsa, Okla.—p. 1062.
136 Alcohol Injections in Trifacial Neuralgia; Report of Cases. S. R. Benedict, Birmingham.—p. 1067.
137 Development of Section and Its Membership. J. W. Jervey, Greenville, S. C.—p. 1071.
138 Double Cavernous Sinus Thrombosis Following Obscure Mastoiditis. W. T. Patton, New Orleans.—p. 1073.

130. **Study of Kidney Functional Tests.**—The nephritic test meal of Hedinger-Schlayer-Mosenthal was used by Desha in thirty-six cases. In general, the results have demonstrated its value in diagnosis and prognosis as found by Mosenthal. The results show a general agreement with the findings from the phenolsulphonephthalein and nonprotein nitrogen determinations. While the test meal gives more information than either of the other two, it does not entirely replace them. Among blood nonprotein nitrogen values higher than 40 mg. per 100 c.c., there is noted an absence of relationship between the magnitude of the value and the prospective fatal determination. The Greenwald modification of the Folin determination of nonprotein nitrogen was used with satisfaction.

131. **Bichlorid of Mercury Poisoning.**—Thorington's patient swallowed one 7½ grain mercuric chlorid tablet. The stomach was immediately washed out with about 3 gallons of water through a stomach tube. The first returning water showed blood. Several eggs were given and were retained. Shock necessitated stimulants. The most interesting feature of the treatment consisted in the large amount of water drunk, much of which was retained and passed through the kidneys. Every twenty minutes he was given a tumblerful until the amount drunk in twenty-four hours was about 3 gallons. Each day the amount of water was lessened, as gastric and cardiac complications arose. However, for several days the patient took from two to three times as much water as he usually consumed in a day. The urine, in spite of the unusual amount passed, showed considerable albumin. There was severe salivation, and the heart was quite irregular both as to rhythm and tone.

Vermont Medicine, Rutland

October, 1916, I, No. 10

139 Pelvic Pain. E. H. Ross, St. Johnsbury.—p. 281.

November, 1916, No. 11

140 Simple Dressings for Simple Fractures. G. W. Bartlett, Bennington.—p. 313.
141 Consideration of Certain Unusual Clinical Features of Cholecystitis and Its Surgical Treatment. E. Eliot, Jr., New York.—p. 318.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bulletin de l'Académie de Médecine, Paris

November 14, 1916, LXXVI, No. 45, pp. 369-378

1 Extra-Articular Removal of Projectile in Condyle of Femur. S. Mercadé.—p. 371.
2 Epidemic Cerebrospinal Meningitis; Twelve Cases. A. Azalbert.—p. 373.
3 Reproduction in the Dog of Generalized Vaccinia. L. Camus.—p. 376.

November 21, No. 46, pp. 379-402

4 Blunders and Injustice in Medical Terms Resulting from Misapprehension of Zoologic and Botanic Nomenclature and from Ignorance of the History of the Biologic Sciences. (Méconnaissance de la nomenclature zoologique et botanique et de l'histoire des sciences biologiques.) R. Blanchard.—p. 380.
5 Elementary Forms of Delirium of Persecution. J. Lépine.—p. 389.
6 *Modifications in Pulse and Arterial Pressure in Soldiers after a Battle. (Modifications du pouls et de la pression artérielle observées chez le soldat au combat.) Briscons and R. Mercier.—p. 391.
7 Cultivation of the Land and Its Productive Capacity to Population Compared in Germany and in France. (De l'insuffisance des productions alimentaires de l'Allemagne; ses causes, ses conséquences.) E. Maurel.—p. 393.

6. **The Pulse and Blood Pressure Under Trauma.**—Briscons and Mercier studied the blood pressure and the pulse in the men brought to the hospital during a recent offensive. They found that men who had been knocked down, but not otherwise apparently directly injured by an explosion, had the pulse and blood pressure affected the same as the wounded men. Those suffering from the effects of the air concussion alone had the pulse accelerated, but the blood pressure was not modified so much as in the first group. On the other hand, men presenting distress and rapid breathing, suggesting organic trouble, but in reality merely the effect of emotional stress, had pulse and blood pressure approximately normal notwithstanding their impressive clinical appearance. It thus proved possible to sift out at once the cases of actual organic injury.

Grèce Médicale, Athens

1916, XVIII, No. 7-8, pp. 13-16. French Supplement to Iatriki Proodos

8 Recklinghausen's Disease Localizing in the Eyelids. A. Gabrielides.—p. 13.

No. 15-16, pp. 29-32

9 Treatment of Congenital Dislocation of the Hip Joint. (Sur le traitement des luxations congénitales de la hanche.) P. Nicolaidis.—p. 29. Concluded in No. 17.

Journal de Médecine de Bordeaux

November, 1916, LXXXVII, No. 13, pp. 251-268

10 *Inherited Syphilis Masquerading as Tuberculous Glandular Lesions. (Lésions dites "bacillaires" et syphilis héréditaire.) J. Vergely.—p. 251.
11 *Treatment by the Nonspecialist of Ear, Nose and Throat Affections. (Médecine générale et oto-rhino-laryngologie.) Got.—p. 254.

10. **Bacillary Glandular Affections and Inherited Syphilis.**—Vergely relates that among the soldiers sent to recuperate at the hospital in his charge on the seashore, there were about a hundred who came labeled *adénite bacillaire*. The glands involved were in order of frequency after the neck, in the groin, axilla, peritoneum and mediastinum. Some had been suppurating for months. He examined teeth, eyes and ears for stigmata of inherited syphilis, and asked if there was tuberculosis in the family, whether other children had died young, and whether the patient had ever had syphilis. When anything could be found to suspect syphilis he instituted very vigorous specific treatment for it. The mercury was pushed almost to the limit, for a month or two, and the long rebellious glandular lesions subsided promptly. He comments that the domain of syphilis is being enlarged more and more every day, and this is fortunate, as syphilis is curable. Even when tuberculosis or other affections are associated with it, getting the syphilis out of the way is important progress toward the cure of the whole.

11. **General Medicine and Otorhinolaryngology.**—Got's long communication is in response to an official request of the military authorities for information on the ear, nose and throat affections that can be treated by the nonspecialist and those that must be sent to specialist headquarters, and the time when this should be delayed no longer. The address was presented at a conference of army medical men, nonspecialists.

Lyon Médical, Lyons

November, 1916, CXXV, No. 11, pp. 465-512

12 The Chemical Industry in France and in Germany.—P. Garnal.—p. 465. Continued.
13 *Address to Returning Medical Prisoners of War. E. Weill.—p. 502.

13. **Address at the Arrival of Repatriated Medical Prisoners of War.**—Weill was commissioned to deliver the address of welcome, Oct. 6, 1916, to a band of French physicians just released from captivity in Germany, Lyons being their first stop after entering France by way of Switzerland. They had been shut off for months or years from all news of medical matters in France, and Weill presented the medical history for this period. Lauding preventive vaccination, he related that not a single case of smallpox has been known in the French armies, and since vaccines against both typhoid and paratyphoid have been used, these diseases have been practically conquered. It has been found that curative serums and surgery give better results the earlier they are applied, so the laboratories for diagnosis, the operating rooms, etc., in short the whole medical equipment and personnel have crept closer and closer to the firing line until the wounded now get at once, as if by magic, the benefits of the most recent advances in science. The mortality from skull wounds has thus been reduced to 25 per cent.; of abdominal wounds to 45 per cent. from 95 per cent.

Paris Médical

November 18, 1916, VI, No. 47, pp. 437-452

14 *Examination of Abdomen and Tongue in the Typhoid Group. L. MacAuliffe.—p. 437.
15 *Suspension in Treatment of Fractures. Cattier.—p. 439.
16 *Extraperitoneal War Wounds of the Colons. M. Stassen and J. Voncken.—p. 444.
17 Telephone Device for Locating Metal Foreign Bodies in the Tissues. (Le repérage immédiat des projectiles de guerre.) G. Houzel.—p. 448.

14. **Examination of the Abdomen and Tongue in Typhoid Group.**—MacAuliffe describes in detail the findings on palpation and percussion of the abdomen throughout the course of typhoid and paratyphoid and also the aspect of the tongue, as he has recorded them during the epidemics of these diseases since the war began. He says that his data supplement the description in the textbooks. The tension of the abdominal walls is most pronounced in the region of the cecum from the very first, and persists longest here. When perforation or hemorrhage is impending the abdominal wall stiffens. Recovery cannot be counted on till the caliber of all the parts of the intestines accessible to palpation is regular once more.

15. **Suspension in Treatment of Fractures.**—Cattier gives an illustrated description of various devices for this purpose as he saw the method applied "avec succès et magistralement" in the American hospitals.

16. **Extraperitoneal Wounds of the Colons.**—Stassen and Voncken remark that the symptoms from a mere wound of the abdominal wall may be as stormy at first as from injury of viscera. A grazing wound may cause contusion of the intestinal wall with an eschar, and as this drops off the mischief may be as great as from a primary injury. Extraperitoneal injury of the large intestine may entail gaseous crepitation in and around the injured area, with rapid development of a fecal phlegmon. If the projectile is loose in the lumen of the intestine, it may move along and give misleading shadows at intervals of only a few minutes while, left alone, the projectile may be passed in the stools within a few days. They reiterate that extraperitoneal wounds of the abdomen should not be included in the statistics of other abdominal wounds, as they are in a class apart. Their only gravity is from a subperitoneal phlegmon, and an early mechanical cleaning out of the region wards this off, but the symptoms may be deceptively like those of more serious injuries. The disappearance of the area of dulness over the liver, regarded by many as an infallible sign of perforation of the intestine and escape of gas into the peritoneum, has lost its diagnostic value as it may occur with these extraperitoneal wounds of the colon. It seems to be connected with irritation of the nerves of the peritoneum. The same might be said of all the classic "abdominal signs." Only the intensity of the symptoms, the relations between them and the clinical aspect as a whole, in connection with supervision every minute of the beat and force of the pulse, enable us to distinguish between the harmless cases and those requiring a laparotomy.

Presse Médicale, Paris

November 23, 1916, XXIV, No. 65, pp. 529-536

18 *Remedy for Alimentary Anaphylaxis in Man of 29. (Etude physio-pathologique et thérapeutique d'un cas d'urticaire géante. Anaphylaxie et anti-anaphylaxie alimentaires.) P. Pagniez and P. V.-Radot.—p. 529.

19 Arthrotomy of the Knee through the Patella. (L'arthrotomie de genou par la voie transrotulienne verticale ou oblique.) Bougot and de la Rue.—p. 532.

18. **Cure of Alimentary Urticaria.**—The robust man of 29 displayed a slight tendency to corpulence but had been healthy till March, 1915, when he developed suddenly a syndrome resembling Quincke's edema, the attacks of edema coming on suddenly, lasting several hours and then completely subsiding. The edema was at times so extreme that the eyes were entirely closed. Chronic, intense urticaria developed at the same time and persisted in variable forms, not a day without some manifestations. Twice the edema affected the pharynx, and the urticaria was accompanied by pruritus. The disturbances were traced to the food, to albumin from any source, animal or vegetable, but most pronounced after the former. The case was studied extensively from several points of view, and the findings are tabulated. The various methods of treating urticaria, calcium chlorid, epinephrin, autohemotherapy, etc., were given thorough trials without benefit. Finally an attempt was made to combat the anaphylaxis responsible for the condition by inducing an anti-anaphylaxis according to Besredka's principle of warding off anaphylaxis in serotherapy by giving one or more small doses of the serum an hour before the main injection. The patient was given an hour before the meal a small amount of the albumin of which he was to make his meal. The results surpassed all expectations, the man being thus relieved at one stroke of the disturbances culminating in the urticaria, pruritus, etc. The details are tabulated in full of this method of fighting fire with fire. For example, if the meal is to consist of bouillon, boiled beef, macaroni, bread, wine and sweets, the man eats an hour beforehand 5 gm. of boiled beef, 5 gm. potato, and 2 gm. bread. Not a trace of skin trouble follows. Practically the same meal, taken an hour after a preliminary ingestion of 6 gm. of potato alone, is followed by severe manifestations of urticaria.

Further study of the case showed that it was possible to ward off the anaphylaxis with preliminary ingestion of derivatives of albuminoid substances, such as ordinary peptone. This answered the purpose of the desired anti-anaphylaxis, which rendered the task much more convenient for the patient. It was found that under this preliminary ingestion of a sample of the food to be eaten an hour later, or taking peptone instead, the blood no longer showed the typical anaphylaxis changes but behaved like normal blood, developing the leukocytosis of digestion as under physiologic conditions, instead of the reverse drop in the leukocytes during the anaphylactic crisis. The latter occurs in two phases; first, the drop in arterial pressure, the inversion of the leukocyte formula, the change in coagulability, and the pruritus; secondly, the skin changes, which come on and persist for many hours, testifying to the intensity of the shock to the organism. In conclusion it is suggested that possibly this case may have a lesson for the treatment of hay-fever and asthma by preventive anti-anaphylaxis. The patient in the case reported still has his urticaria, etc., when he omits to take the preliminary dose of exactly 0.5 gm. peptone or small amount of the food to form the meal, and the interval has to be exactly one hour. At the same time it is evident now that the urticaria is growing less severe than it used to be.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 11, 1916, XLVI, No. 46, pp. 1537-1568

20 *Improvised Orthopedic Devices. H. Hössly.—p. 1537.

November 18, No. 47, pp. 1569-1600

21 *Myelitis Developing under Salvarsan. (Ueber Salvarsan-Myelitis.) C. Socin.—p. 1569.

22 Present Status of Knowledge of Roentgen Rays and Radio-Active Substances. (Ueber Strahlentherapie.) E. Anderes.—p. 1580.

23 Rupture of Tympanic Membrane from Closing Nose and Mouth to Repress Vomiting Impulse. (Seltener Fall von indirekter Trommelfellruptur.) P. Sokolow.—p. 1591.

November 25, No. 48, pp. 1601-1632

24 Importance of Bacteriologic Diagnosis of Diphtheria. (Ueber die Leistungsfähigkeit und den Wert der bakteriologischen Diphtherieuntersuchungen.) R. Klinger and E. Schoch.—p. 1601.

25 Present Status of Pseudoparalytic Myasthenia Gravis, with Report of Case. C. Krähenbühl.—p. 1611.

26 Extrapleural Pneumothorax with Artificial Pneumothorax. Gwerder.—p. 1618.

20. **Orthopedic Devices.**—Hössly is chief of a military sanatorium caring for disabled interned prisoners of war, and he describes with twenty-six illustrations a number of apparatus that have been devised to meet the various conditions encountered and overcome the disability. Diagrams are given to show the mechanical principles of a number.

21. **Myelitis Under Salvarsan.**—Socin's case resembles in some respects that reported by Chiari in 1913 in which a woman of 27 with secondary syphilis developed severe symptoms of cerebral irritation after three doses of neosalvarsan. After four days the brain symptoms subsided but paralysis of both legs and of the bladder then developed, and the woman died in six months from general debility in consequence of suppurative bladder and kidney disease and extensive decubitus. Nothing pathologic was found in the brain or medulla, but the spinal cord showed extensive destructive processes. Socin's patient was a woman of 38 with a history of abortions and miscarriages, appendicitis at 18, articular rheumatism at 23 and pneumonia at 30 with empyema treated with resection of ribs. Her husband had died of "softening of the brain." During the last six months she has been restless and agitated, with frequent headaches, and some efflorescences on shoulder and knee, undoubtedly of syphilitic origin although the Wassermann test twice applied elicited no response. An intravenous injection of 0.5 gm. salvarsan was given, repeated five days later. The first was borne well, but after the second the temperature rose and in two days there were symptoms of encephalitis. These gradually subsided and symptoms developed indicating a severe and extensive affection of the spinal cord, with decubitus and a tendency to clonic and tonic spasms. She died in fourteen months from debility from the profusely suppurating decubitus, etc., plus pneumonia. The Wassermann test was negative throughout. Socin states that there was nothing to suggest that the trouble was an acute infectious myelitis of unknown cause, while the encephalitis symptoms at first sustain the assumption that the drug was responsible for the whole syndrome. The stormy stage lasted six weeks and then some of the symptoms subsided, but spastic paraplegia of both legs was left and persisted till death, with sensory disturbances, all indicating myelitis of the cord in the lower cervical region affecting predominantly the lateral columns. The necropsy findings are described in detail. They confirmed in every respect the assumption of toxic myelitis. The freedom from phenomena of degeneration in the sensory roots testifies against the trouble being due exclusively to the arsenic element. Socin adds that 65.8 per cent. of all the fatal encephalitis cases occurred with doses of 0.5 gm. and over.

Deutsche medizinische Wochenschrift, Berlin

October 26, 1916, XLII, No. 43, pp. 1309-1340

27 *Statistics in regard to Prevalence of Diabetes. (Diabetes und Krieg.) A. Gottstein and F. Umber.—p. 1309.

28 *Nerve Transplantation. (Zwei neue Methoden der Ueberbrückung grösserer Nervenlücken.) A. Bethe.—p. 1311. Concluded

29 *Dengue in Argentina. R. Kraus.—p. 1314.

30 *Diagnosis of Duodenal Ulcer. J. Nowaczynski.—p. 1315.

31 Neuroses and Psychoses of Toxidigestive Origin. E. Grandjean-Hirter.—p. 1316.

32 Frequency of Albuminuria with Artificial Pneumothorax. J. Gwerder and J. H. Benzler.—p. 1318.

33 *Cystic Kidney. (Zur Diagnose der Zystenniere.) W. Karo.—p. 1320.

34 Weight Gage for Testing Strength of Muscles. (Ein neuer Kraftmesser.) Loewenthal.—p. 1322.

35 The Peptone Test in Milk. (Die Peptonprobe in der Milch.) S. Serkowski.—p. 1323.

36 Welfare Work for the Blinded in War. (Kriegsblinden-Fürsorge.) W. Feilchenfeld and Bauer.—p. 1324.

27. **Diabetes and the War.**—Gottstein and Umber relate that all writers on diabetes have deplored the lack of reliable data as to the prevalence of diabetes. The mortality records

afford little information as comparatively few die from diabetes, and the existence of the diabetes is not mentioned when they succumb to an intercurrent disease. The war has unexpectedly bridged this gap in our knowledge of diabetes, as, in the state regulation of the food supply, all requiring a special diet were compelled to bring a medical certificate to that effect. They could thus obtain the extra fat they needed, and all the diabetics took advantage of this, even the milder cases. The opportunity was utilized to obtain specific data on the age, profession, etc., and duration of the diabetes. The statistics thus collected in Charlottenburg, a fashionable suburb of Berlin, show that there are 706 diabetics there, of whom about 58 per cent. are males. In five cases both husband and wife are diabetic, in one case father and adult son. This is a proportion of 2.3:1,000 inhabitants while in Berlin proper the proportion is only 1.2 or 1.3:1,000. About 33 per cent. of all the cases were at the age of 60 to 70 while only 2 per cent. were in the twenties and 6.8 per cent. in the thirties. These statistics confirm the graver prognosis the younger the age. The duration of the diabetes was given as six years in fifty-three diabetics in the fifties, and over nine years for sixty-six in the sixties, including five with diabetes for over twenty years. The vicissitudes of the war do not seem to have brought on diabetes in the previously healthy, and the predisposed do not inevitably develop it.

28. **Bridging Gaps in Nerve.**—Bethe transplants a segment of a corresponding nerve from the cadaver, and commends this method of bridging a gap as it has proved its reliability on dogs in the clinic. The great endurance of excised segments of nerves permits thorough bacteriologic tests for their sterility before they are grafted. Blood from the cadaver in question can also be tested for the Wassermann reaction. When the segment is excised from the fresh cadaver, he cuts the peripheral end slanting, to be sure to recognize it. The nerve segment is placed in a small Petri dish inside a larger one and is placed on ice, while other scraps are taken for bacteriologic tests. The nineteen segments he has prepared to date, taken from seven cadavers, all happened to be sterile. He has thus transplanted nerves in four clinical cases. All healed in place without any temperature reaction. In dogs the implant heals in place in four or five days so that further immobilization is unnecessary. Small stitches, only 2 mm. from each end, parallel to the course of the fibers, are much better than larger stitches. He uses the finest eye needles and No. 000 silk. Even with this care, some of the fibers may get caught in the stitches. For a nerve with a diameter of 2 or 3 mm. he takes six or eight stitches, applies a starch dressing and lets the animal run around. By the fourth or fifth day the dressing is taken off and the animal uses the leg freely; none of the sutures ever seemed to have loosened. He advises to use the corresponding nerve from the cadaver for the graft, but thinks it scarcely practicable to fit the ends of the bundles of fibers exactly like to like.

29. **Epidemic of Dengue in Argentina.**—Kraus states that nearly the entire population of two towns, one in Argentina and one across the border in Uruguay, had dengue last spring and it spread throughout that Argentine province but died out in March and April. There were no complications and no fatalities, but convalescence was protracted and the patients felt extremely weak and had no appetite. No microorganism could be cultivated from the blood or detected with the microscope. The leukocyte count was low in many cases, down to 2,200 leukocytes in some, with increased numbers of lymphocytes and large mononuclears, but no eosinophilia was evident in the convalescents. The disease did not seem to be transmitted by direct contact, but it is probable that the swarms of *Culex fatigans* and *Stegomyia fasciata*, exceptionally prevalent that season, were responsible for the transmission. He adds that dengue has been known for years in Brazil and Argentina, but this seems to be the first description of it there to be published.

30. **Diagnosis of Duodenal Ulcer.**—Nowaczynski reports three cases in which the clinical picture indicated abnormal conditions in the pylorus calling for operative treatment, but this diagnosis was not sustained by the operation. The trouble proved to be adhesions between the stomach and liver or adhesions as far away as the spleen region, suggesting a fresh anatomic lesion and inducing spasm of the bowel. These spastic conditions affect the stomach and by reflex action modify the stomach functioning. This altered functioning of the stomach may be manifested by pylorospasm, hypertonus, exaggerated peristalsis and hypersecretion with its train of subjective disturbances. If then are superadded on these symptoms, the disturbances from altered conditions in the vegetative nervous system, such as are common with duodenal ulcer, the diagnosis of duodenal ulcer is almost inevitable. In one of the three cases described occult blood in the stools aided in misleading the diagnosis. There did not seem to be any lesion elsewhere in the bowel that might have explained it. It is hard to explain the source of the occult blood found constantly in the stomach content in the case in which an old healed ulcer was found in the duodenum; the blood certainly came from the stomach in this case. It is a question whether local violent and painful contractions of the stomach can cause laceration of vessels enough to explain the blood findings. In the three cases reported there had been stomach trouble respectively for ten weeks or twelve years, five years and one month, with intervals of freedom from symptoms. The patients were 33, 25 and 23 years old. In the last mentioned case the disturbances began suddenly with intense pain in the stomach and bloody vomit. The repeated vomiting relieved the pains but they soon returned regularly after each meal. By the end of the month the pains had become stronger and continuous, but there was a good appetite and no occult blood in the stools. A gastric or duodenal ulcer seemed almost certain and as the pains kept up unbearable, the abdomen was opened. The stomach was somewhat enlarged and the pylorus contracted, but no signs of an ulcer could be detected in stomach or duodenum. In the spleen region stout adhesions were found, relics of perisplenitis. A gastro-enterostomy was made with a short loop.

33. **Cystic Kidney.**—Karo removed the right kidney on the diagnosis of pyonephrosis but found this a mistake as it was evidently a congenital cystic kidney. The other kidney was enlarged but seemed to rally to the task thrust on it. The patient had immeasurably improved over his previous condition, when an intercurrent pneumonia proved fatal by the end of the month. The case is reported as showing that bilateral cystic kidney will permit nephrectomy under certain circumstances.

Münchener medizinische Wochenschrift, Munich

October 17, 1916, LXIII, No. 42, pp. 1477-1508

37 *Diagnosis of Weil's Disease. C. Baumler.—p. 1477.
38 *Injection of Alcohol in Treatment of Hemangioma. K. Stromeyer. —p. 1480.
39 Pulmonary Tuberculosis or Pulmonary Syphilis. (Lungentuberkulose oder Lungensyphilis?) Wilmans.—p. 1481.
40 Embedding in Gelatin for Frozen Sections. (Gelatineeinbettung für Gefrierschnitte.) S. Graff.—p. 1482.
41 Concretions in the Lungs. (Fall von Steinhusten.) M. Helbig. —p. 1483.
42 Seven Years of Infant Welfare Work. (Sieben Jahre Säuglingsfürsorge in Gunzenhausen.) Eidam.—p. 1484.
43 Dysentery and Its Diagnosis. (Einiges über Ruhr und vorläufige Mitteilung eines einfachen Verfahrens zur Schnellfarbung von Ruhramöben zu diagnostischen Zwecken.) W. Riegel.—p. 1493.
44 *Five-Day Fever. (Zur Ursache und Uebertragung des Wolhynischen Fiebers.) H. Töpfer.—p. 1495.
45 Paratyphoid in the Eastern Seat of War. (Epidemiologische Bemerkungen über Vorkommon von Paratyphus A im Orient und auf dem Balkan.) Mühlens.—1496.
46 Acute Bacterial Urethritis Following or Accompanying Gonorrhea. (Ueber akute urethritische Prozesse bakterieller (nichtgonorrhoischer) Natur nach abgelaufenem Tripper oder bei chronischer Gonorrhöe und den Streptobacillus urethrae Pfeiffer in ätiologischer Beziehung zu ihnen.) Engwer.—p. 1496.
47 Reinfusion of Liter of Own Blood from Abdominal Hemorrhage. (Zur Wiederinfusion abdomineller Blutungen.) Kreuter.—p. 1498.
48 Ligation of Hypogastric Artery for Hemorrhage from Superior Gluteal Artery. (Zur Bekämpfung der Nachblutung aus der A. glutaea sup. durch Unterbindung der A. hypogastrica.) Flörcken.—p. 1499.
49 First Treatment of Wounds of the Ear. (Ueber Anzeige und Art der ersten Behandlung von Ohrschussverletzungen.) W. Klestadt.—p. 1499.
50 Intravenous Injections of 1 per cent. Lactic Acid in Treatment of Epidemic Meningitis. J. Bamberger.—p. 1501.

51 Breathing Exercises, etc., in Treatment of Functional Voice and Speech Disturbances. S. Marx.—p. 1502.
52 Treatment of Dysenteric Liver Abscess. T. Grussendorf.—p. 1503.
53 Leech in Throat; Three Simultaneous Cases. (Blutegel im Kehlkopf.) Härting.—p. 1505.
54 No Effect from Cholin Chlorid Injected to Soften Cicatrix; Thirty-Seven Cases. O. Burkard.—p. 1505.
55 Frame to Hold Three Litters to Economize Space. (Die Lagerstätten in den Sanitätsunterständen.) Stumpf.—p. 1505.
56 Device to Overcome Effects of Ulnar Paralysis. Port.—p. 1506.
57 Moist Dressings for Wounds. (Feuchte Wundbehandlung.) Hartleib.—p. 1907.
58 *Lice Drop Off and Can Be Carried by the Wind a Short Distance. (Zur Biologie der Kleiderlaus.) Schaefer.—p. 1507.

37. **Weil's Disease.**—Bäumler remarks that the army experiences have confirmed the peculiar restriction of this disease to the younger men and the summer months, and its prevalence at certain points in small epidemics. Another feature is the frequency of cases in which swimming pools seemed to be a factor in its spread. Differentiation is simple and easy now since it has been shown that intraperitoneal injection of the blood in a guinea-pig reproduces the typical disease. Krummbein and Frieling have recently announced that the disease can occur in dogs and be transmitted by their bite or by fleas from them. The disease is rare among civilians. Bäumler has encountered only one case in civilian circles in his fifty years of practice. This was in 1894, and he reproduces the clinical notes on the case. It was extremely severe, the prolonged fever, severe nephritis and jaundice in the carpenter, 26 years old, being more pronounced than in the classic type of Weil's disease. There were also urticaria, parotitis, cystitis and general hydrops, and actual convalescence did not set in until after the ninth week. The man then gained over 37 pounds in two months. Bäumler publishes the details mainly to emphasize the complete recovery, recent examination having shown the man sound and robust with healthy children.

38. **Treatment of Hemangioma.**—Stromeyer squeezes out the contents, compressing the afferent vessels to keep out influx of more blood, and then injects alcohol, forcing it against all parts of the wall of the hemangioma. He has thus treated thirty patients with hemangioma; the success was prompt and complete in all. He keeps up the compression for a minute or two after the injection. The procedure is repeated at intervals of one or two weeks. Three or four sittings are usually required for a hemangioma as large as a walnut.

44. **Five-Day Fever.**—Töpfer incriminates the louse in the transmission of this disease, called wolhynic fever by His. He mentions other features of the disease and of the short thick bacilli he found in lice that had bitten patients—all testifying to the analogy between this disease and typhus, although they are well defined separate diseases. Probably the germs causing them are closely allied.

58. **Biology of Body Louse.**—Schaefer calls attention to the way in which body lice are liable to drop off when the clothing is being taken off. They let themselves drop to seek more sheltered spots when they are thus exposed to the light and air. He was examining in the open air some war prisoners who complained of being sick. As one of the men stripped off some of his clothing, Schaefer saw a falling louse caught up by the wind and flung against his coat. It dropped to the ground from the smooth surface of the coat, but since then he never stands to leeward of a person suspected of harboring lice, and has never become infested with them, although he has had occasion to vaccinate and examine thousands all more or less louse-infested.

Wiener klinische Wochenschrift, Vienna

October 11, 1916, XXIX, No. 41, pp. 1289-1320

59 *Hemolysis by Radium Rays. (Ueber Hämolyse durch Radiumstrahlen.) W. Hausmann.—p. 1289.
60 *Treatment of Bacilli Carriers. (Behandlung der Bazillenträger.) A. Herz.—p. 1290.
61 Skin Affection from Contaminated Petrolatum Used in a Salve. M. Oppenheim.—p. 1293.
62 War Neuroses. (Zur Klinik und Prognose der Kriegsneurosen.) E. Schneider.—p. 1295.
63 Factitious Ulcerations. (Ein charakteristisches, künstlich erzeugtes Geschwür.) Liebl.—p. 1303.
64 Improvised Splint for Fracture of Upper Third of Femur. (Zur ersten Versorgung hochsitzender Oberschenkelfrakturen.) O. Schwarz.—p. 1304.
65 Treatment of Abdominal and Skull Wounds Close to the Firing Line. R. Fibich.—p. 1317. Continued.

59. **Hemolysis by Radium.**—Hausmann relates experiences which show that the radium rays are able to hemolyze rabbit red corpuscles suspended in agar plates. This seems to be the work of the beta rays.

60. **Treatment of Bacilli Carriers.**—Herz states that the central hospital for epidemic diseases in his charge has had a constant average of 700 typhoid or paratyphoid cases, and thus has provided ample opportunity for study of various epidemiologic questions, especially those connected with carriers. The stools and urine were examined for bacilli day by day or on alternate days, in order to detect any possible connection between the elimination of the bacilli and clinical manifestations. By this means it was ascertained that any intercurrent febrile affection seemed to check the elimination of the germs. This suggested that an artificially induced rise in temperature might have the same effect. To induce this, the corresponding vaccines were given a trial, but did not prove effectual. Then parenteral injection of a protein was tried and this seemed to answer the desired purpose. Herz selected milk as the best available protein, as R. Schmidt has reported that this induces a therapeutic fever in hemophilia, pernicious anemia, leukemia, etc.; Müller has thus treated also inflammatory processes, bubo, phimosis and epididymitis, while Saxl has been applying it systematically in typhoid. Herz injected into the gluteal muscle 10 c.c. milk, boiled in the water bath. About eight or ten hours thereafter the temperature rose, sometimes with a chill; it kept high for two or three hours and then dropped back to the previous figure. No by-effects were noted except slight headache in some cases. The rise in temperature was moderate, and variable in different patients and at different times in the same patient. No such temperature response was obtained as is the rule in blood disease. In the bacilli carriers, besides the fever, it was noted that the bacilli were driven out into the blood and some were eliminated in the urine. The blood picture was also modified, and there is reason to assume that any local inflammatory process was also whipped up. These biologic phenomena are accompanied by mobilization of antibodies, and these various factors seem to combine to eradicate the lurking bacilli in the body and put an end to the "carriership." Of course time alone will show whether the parenteral protein treatment gives durable results. To date, the stool and urine findings have been constantly negative in four chronic cases given four or five injections. In the recent cases one injection sufficed. He emphasizes the importance of this from a military point of view, as otherwise these men would have to be kept for weeks or months in the hospital after complete clinical recovery, encumbering the hospitals and depriving the army of their services. On the other hand, the reaction to the parenteral protein is comparatively insignificant, the disturbances being less, as a rule, than even those from antityphoid vaccination.

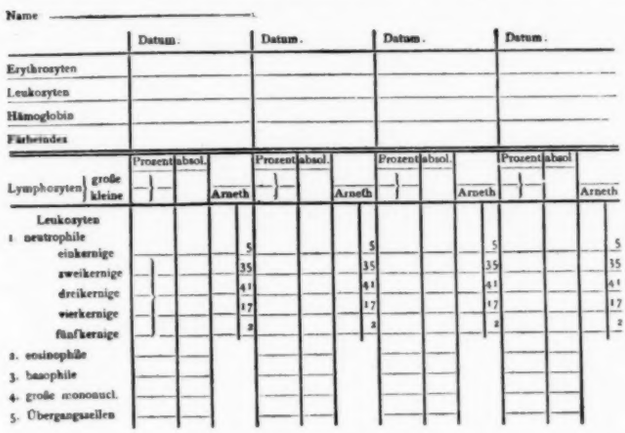
Zeitschrift für Tuberkulose, Leipzig

1916, XXVI, No. 4, pp. 241-320. Last indexed Dec. 2, 1916, p. 1701

66 Modification of Course of Pulmonary Tuberculosis by Emotional Stress. (Zur Frage der Bedeutung psychischer Momente für den Verlauf der Lungentuberkulose.) K. Turban.—p. 241.
67 *Record of Differential Blood Count in Pulmonary Tuberculosis. (Zur Beobachtung des Blutbildes bei Lungentuberkulose.) K. Turban.—p. 242.
68 *Storing of Drugs in Tuberculous Tissues. (Ueber die Speicherung von Medikamenten in tuberkulösem Gewebe.) Stern.—p. 244.
69 How Switzerland Meets the Question of Tuberculosis in Soldiers. (Die Versorgung der Kriegstuberkulösen im schweizerischen Heer.) E. Meissen.—p. 249.
70 *Connection between Trauma and Tuberculosis. J. Orth.—p. 264.
71 Tuberculosis and Alcohol. L. Katharine.—p. 281.
72 The Predisposition to Tuberculosis. L. Katharine.—p. 288.

67. **Systematic Study of the Blood Picture in Pulmonary Tuberculosis.**—Turban has found the accompanying chart extremely useful in recording the blood findings over long periods for comparison. In protracted chronic cases, once a month is the routine interval, avoiding the menstrual period

in women and the few days before and after it unless its influence on the blood picture is being studied in particular. Daily records of the differential blood count over long periods might afford very valuable information; it requires extreme



care and practice in enumerating the nuclei as otherwise comparison between the findings of different observers is unreliable.

68. **Accumulation of Medicinal Agent in Tuberculous Tissue.**—Stern thinks that the principle of chemotherapy, in the sense of a special affinity of the bacilli or of the diseased tissues for the introduced drug, has not been proved. But there is every reason to assume that where the circulation is especially active the drug is brought into the region; then by checking the circulation, the drug can be kept there. It is possible to influence artificially the circulation along these lines. Among the arguments he presents to sustain this view of the lack of a firm scientific basis for the so-called chemotherapy is the efficacy of potassium iodid in sporotrichosis. Nothing else ensures so prompt and so complete a cure as this, but potassium iodid does not act on the parasite; there is no "affinity" between them. It disintegrates the cells of the infiltrate, leaving the parasites unmodified. This is its action also in syphilitic gummas; it breaks up the pathologic tissue cells but does not destroy the spirochetes. No one claims that it kills the spirochetes. We are far from the realization of an effectual chemotherapy for tuberculosis, but in the meanwhile we are able to draw and hold the drug in the diseased area by various measures to induce hyperemia in general and also local hyperemia. Attempts to increase the action of phototherapy by salve treatment and efforts in the line of accumulating deposits of the drug in the pathologic area by stasis or other hyperemia—thus storing up potassium iodid, for instance, in the diseased tissues—deserve the greatest attention and imitation. Here is a field, he adds, in which actual experience takes precedence of theorizing.

70. **Connection Between Trauma and Tuberculosis.**—Orth has had occasion to testify in four additional cases in which the accident insurance companies were questioning the connection between a trauma and following tuberculous disease or aggravation. The details of these (ninth to twelfth) cases are given in full. In three of the cases he testified to the effect that the trauma had no direct connection with the tuberculosis, but, in the fourth case, that there could be no doubt that the trauma had been responsible for the fatal hemoptysis that had followed.

Zentralblatt für innere Medizin, Leipzig

October 28, 1916, XXXVII, No. 43, pp. 753-768

73 *Alimentary Dropsy. (Ueber Hungerödeme.) A. V. Knack.—p. 753.

73. **Alimentary Dropsy.**—Knack describes what he calls *Hungerödeme* as it has been observed in various devastated regions and prison camps during the war. It resembles the edema with kidney disease but comes on with dysenteriform symptoms. The extreme edema in certain parts of the body and the motor feebleness are the main features. Analysis of the various epidemics demonstrates apparently some connection with the food, not so much quantitative as qualitative. The persons that suffer from this hunger edema are not so much the ordinary poorer classes as those reduced to penury by the war or other cause. The bad quality of the food, spoiled potatoes, etc., induce a primary severe upset in the digestive organs and this entails the cachexia, edema and other features of the syndrome in question. It has never been produced experimentally under starvation alone.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 8, 1916, XXXVII, No. 81, pp. 1265-1280

74 Disinfection of Wounds with Fermented Milk in Prevention and Treatment of Tetanus. (Due casi di tetano guariti. Batterioterapia lattica della ferita.) S. Colombino.—p. 1267.

Policlinico, Rome

November, 1916, Surgical Section No. 11, pp. 321-352

75 *Case of Bilateral Mammary Tuberculosis. P. Gilberti.—p. 321.
76 *Catheterization of the Ureters. (Contributo allo studio del valore del cateterismo ureterale.) E. Pirondini.—p. 331.

75. **Bilateral Mammary Tuberculosis.**—Gilberti's patient was an unmarried woman of 50 and there was no evidence of tuberculosis elsewhere than in the left breast. The lesion had been developing for seven months and was as large as a hen's egg. He resected the entire breast and the otherwise healthy woman rapidly recovered. She returned a year later with a similar tumor in the right breast. It had been noted for two months, and he removed this breast also. Scanty tubercle bacilli and the characteristic tissue findings were demonstrated in each of the lesions. This isolated bilateral tuberculosis of the breast is very rare, still more so the development in a virgin.

76. **Catheterization of the Ureters.**—Pirondini concludes this long study of the advantages and the drawbacks of catheterization of both ureters, with the statement that nothing else can compare with it in reliability, but that even this may prove misleading. The catheters may injure the tissues and falsify the deductions, or the patient's general condition may interfere with instructive findings. An exploratory incision, exposing the kidney, may usefully supplement catheterization of the ureters in dubious cases. He adds that massage of the kidney as a means to induce unilateral polyuria is futile. His wide experience with catheterization of the ureters is reviewed with much detail.

Siglo Medico, Madrid

November 18, 1916, LXIII, No. 3284, pp. 737-752

77 *Experimental Arthritis in Rabbits. (La artritis experimental en los conejos, contribucion a la patogenia de la artritis en el reumatismo febril.) H. K. Faber.—p. 738.
78 *Simultaneous Spastic Spinal Paralysis of Alimentary Origin in Two Brothers. (Doble caso de latirismo.) E. F. Sanz.—p. 741.

77. **Experimental Arthritis and Pathogeny of Arthritis in Rheumatic Fever.**—This is a translation of Faber's report which was reviewed in THE JOURNAL, 1915, lxv, 1850.

78. **Spastic Spinal Paralysis of Alimentary Origin.**—Two brothers, 27 and 19 years old, previously healthy and of a healthy family boarded for three months together at a place where dishes made with the chick-pea formed a large proportion of the food. By the end of the third month both brothers noted that it was increasingly hard for them to move their legs and in a few days they could not walk or stand without aid, while there were spasmodic contractions at times. The older brother was able to get about with a cane, but the younger was entirely helpless. The syndrome is that typical of spastic spinal paraplegia in both, and it has persisted unmodified during the eight months to date, without any other symptoms, all the disturbances being limited to the lower limbs. The only probable explanation for the trouble is poisoning from the flour made from the seeds of the chick-pea, the vetch of the lathyrus species, which is known to be capable of inducing bromatologic intoxication or lathyrism. It is not so rare in Spain, Sanz remarks, as the paucity of the literature on the subject would indicate. The two brothers in question were farm hands free from venereal disease and abuse of alcohol. He relates that the plant in question is the *Lathyrus cicera* or *clymenum* which is called *guija* or

almorta in Spanish, *Platterbse* in German, *gesse* in French, *cicerchia* in Italian and *chich* or *chick-pea* in English. The poisoning is probably not so much from the seeds themselves as from some special modification of them from still unknown causes. Rost has published a statement to the effect that poisoning from this source is more common in rainy than in dry seasons. No attempts to reproduce lathyrism experimentally in animals have proved successful to date, and no necropsy reports of clinical cases have been published, to Sanz' knowledge.

Brazil-Medico, Rio de Janeiro

October 28, 1916, XXX, No. 44, pp. 345-352

79 *Gonorrhea in the Male at Rio. (Sobre o tratamento da blenorrhagia do homem no Rio de Janeiro.) A. Pereira.—p. 346.

November 4, No. 45, pp. 353-360

80 Pigeon Proteus and Its Transmission. (Pesquisas sobre o "Hemoproteus columbae.") H. de B. Aragão.—p. 353.

81 Chloroform for General Anesthesia and Its Dangers. (Annotações praticas sobre a chloroformisação e seus perigos.) O. Clark.—p. 354. Commenced in No. 43, p. 337.

79. **Treatment of Gonorrhea in Males.**—Pereira has been impressed with the frequency of pyelitis in gonorrhea at Rio. It seems to be a part of the normal evolution of gonorrhea in the male there. He says that it can occur only by the infection being carried to the kidney pelvis by the blood or lymph, and this confirms the assumption that gonorrhea is not a local but a general affection. This explains why local measures fail to prevent its passing into a chronic phase. He has been impressed also with the way in which the gonorrhea seemed to be permanently cured when the man had contracted syphilis likewise and was being given treatment for the latter. Under salvarsan alone it showed no improvement, but under a specific course of mercury the gonorrhea seemed to be aborted. The conclusion is inevitable that a general course of mercurial treatment is indicated in gonorrhea. After extensive experiments he decided that mercury biniodid seems the best adapted for the purpose. The dosage need not be so large as for syphilis. He has thus eradicated the gonorrhea in from twenty to sixty days with ten to thirty-six injections of 5 mg. or half this, of mercury biniodid (*bi-iodureto de mercurio*), repeated daily or on alternate days, without any local measures. By way of the stomach, the action is slow and inconstant, and intramuscular injections are less effectual than intravenous. In conclusion, Pereira reiterates that chronic urethritis is almost incurable at Rio by the other treatments advocated to date, but the prospects are bright for the permanent cure, without local measures, under a systematic course of mercurial intravenous injections.

Semana Medica, Buenos Aires

September 21, 1916, XXIII, No. 38, pp. 277-304

82 Venereal Granuloma. M. Beatti.—p. 281.

83 Genesis and Treatment of Dementia Praecox. C. A. Bambaren and H. F. Delgado.—p. 292.

84 Pharmacy a Profession. (El farmaceutico en ejercicio. Su caracter civil ante los poderes judiciales.) J. Oro.—p. 297.

September 28, No. 39, pp. 305-330

85 *The Hand Sign of Syphilis. (El signo de la mano. Contribucion al diagnostico de la sifilis.) J. N. Posadas.—p. 305.

86 *Biologic Diagnosis of Pregnancy. F. A. Deluca.—p. 307.

87 *Occlusion of the Urethra in Treatment of Gonorrhea. H. Dasso. —p. 309.

88 Climatotherapy of Tuberculosis in Argentina. J. M. Escalier and P. D. Galli.—p. 317.

85. **The Hand Sign in Syphilis.**—Posadas for the last three years has been noticing very often in his syphilitic patients, with or without treatment, a pinkish spot in the hypothenar region or palm. There is evidently a special dilatation of the capillaries in the skin of this region on both hands. It forms a triangle with the base line running from the middle of the inner half of the first fold on flexing the root of the hand, to the middle of the ulnar edge of the hand. The inner side of the triangle runs from the middle of the ulnar edge of the hand to the digitopalmar fold corresponding to the little finger. The triangle thus occupies the hypothenar region but there may be merely a round spot instead of a triangle. The skin may look pinkish or resemble a scarlatinal eruption or even a vascular nevus, but the redness never extended beyond the outline of the triangle described above. He found this hand sign in 321 of 493 syphilitics examined, that is, in over 65 per cent. but never earlier than the third year after infection. Omitting the patients with infection of more recent date, he found this sign pronounced in nearly 81 per cent. of 397 patients. Specific treatment renders it more intense for the time being and then it returns to its former aspect.

86. **Biologic Diagnosis of Pregnancy.**—In this preliminary communication Deluca calls attention to what he calls the urine-hemolytic reaction as a sign of pregnancy. Tests with sheep red corpuscles, rabbit hemolytic amboceptor and guinea-pig complement showed that addition of urine from a pregnant woman hastened hemolysis by five or ten minutes. Urine from men and from nonpregnant women had the opposite effect, retarding hemolysis. The pregnant urine lakes the red corpuscles even without the hemolytic amboceptor, but it took several hours for this. The presence of complement is indispensable. The findings were constant in the thirty pregnant women examined, in the second to the ninth month of the pregnancy. In one woman the hemolytic reaction was pronounced although six weeks had passed since an abortion at two months.

87. **Occlusion of the Urethra in Treatment of Gonorrhea.**—Dasso is convinced that keeping the tissues laved with the medicinal substance is an important aid in treatment, and hence he applies a rubber covered clamp to close up the urethra in treating gonorrhea. It can be applied and removed as often as necessary, the aim being to maintain the local medication day and night.

Hospitalstidende, Copenhagen

November 15, 1916, LIX, No. 46, pp. 1109-1132

89 *New Bladder Made from Rectum in Treatment of Exstrophy. (En ny Metode til Helbredelse af Ektopia vesicae.) T. Rovsing.—p. 1109.

89. **Treatment of Exstrophy of the Bladder.**—Rovsing gives an illustrated description of two methods for remedying this condition. The second is only to be applied in case the first proves unsatisfactory. The first method is merely to introduce a retention catheter and suture the bladder walls around it. With the second method the trigonum is implanted in the rectum which is severed at the sigmoid flexure and drawn forward to make the new bladder. In the case described in detail he thus produced a closed and continent bladder, which contracts and can be voided voluntarily and with normal frequency, but the patient is left with a fecal fistula above, where the stump of the sigmoid flexure is brought out. Rovsing regards the discomfort from a well made fecal fistula in sound tissues as less annoying than that from exstrophy of the bladder. With his first method, the peritoneum is not opened. The bladder is separated from the urethra and the latter is sutured separately, while the retention catheter assumes its functions. The bladder wall loosened up on all sides is sutured around the catheter. This method has proved satisfactory in a number of cases, the bladder increasing in size to almost normal capacity in time. In case the bladder is too irritable for this, a urinal is worn. This method is far from ideal, but in the most harmless manner it does away with incontinence, seeping of urine and all its evils. When the bladder does not permit this technic, the only choice is between transplanting the ureters into the skin or into the bowel. Each has so many drawbacks that he prefers what he calls his second method, cutting away the bladder walls except around the trigonum and bringing the rectum over to make a new bladder. This method was successfully applied to a boy of 3 after the first method had been tried and failed, owing to conditions left by bilateral herniotomy.

Ugeskrift for Læger, Copenhagen

November 16, 1916, LXXVIII, No. 46, pp. 2009-2050

90 Sprue. (Orientalsk Tropediarré.) A. Trolle.—p. 2009.

91 Protheses after Amputation of Both Thighs. (Om Fremstilling af kunstige Lemmer til Patienter med dobbelsidig Laar-Amputation.) E. Nyrop.—p. 2018.